



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 132155

To: Camie Thompson  
Location: REM 10D28  
Art Unit : 1774  
September 17, 2004  
Case Serial Number: 08/267877

From: John Calve  
Location: CP 3/4; 3D62  
Phone: 308-4139

[John.Calve@uspto.gov](mailto:John.Calve@uspto.gov)

### Search Notes

Camie,

Generally you have to search for the monomers that would combine to yield the polymer or SRU. There are not many records ~~like~~<sup>that</sup> contain SRU's. So for the glycidyl ether in claim 7 I searched for the monomers. In the structure search I created structures for the 3 parts of the claim - phenolic resin, the epoxide and B-2. For B-2 I assumed Q= H and therefore left Q off. Since G could be an -OH group (ie. would be a phenol) I left that group off also. This means you will have to look at the monomers closely.

I apologize for the number of records, I generally try to keep the searches as short as possible. Since this patent has such an early filing date, I date limited the results so the records should all be from 1994 or before.

John

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Camee Thompson Examiner #: 79244 Date: 9/9/04  
 Art Unit: 1774 Phone Number 301-49272-1537 Serial Number: 08/267,577  
 Mail Box and Bldg/Room Location: 10D28 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Adhesive Composites + Copper foils + copper clad laminates  
 Inventors (please provide full names): Charles N. Pontasse  
 Earliest Priority Filing Date: 6/28/1991

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search on Claims

1-19

Patent #  
6132851

Serial #  
08/267,577

Thanks

## STAFF USE ONLY

Searcher: <u>Jan Calne</u>	Type of Search	Vendors and cost where applicable
Searcher Phone #: <u>79244</u>	NA Sequence (#) <u>1</u>	STN <u>#</u>
Searcher Location: <u>10D28</u>	AA Sequence (#) <u>1</u>	Dialog <u>1</u>
Date Searcher Picked Up: <u>9/17/04</u>	Structure (#) <u>1</u>	Questel/Orbit <u>1</u>
Date Completed: <u>9/17/04</u>	Bibliographic <u>1</u>	Dr.Link <u>1</u>
	Litigation <u>1</u>	Lexis/Nexis <u>1</u>

=> file reg

FILE 'REGISTRY' ENTERED AT 11:15:20 ON 17 SEP 2004  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
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Property values tagged with IC are from the ZIC/VINITI data file  
provided by InfoChem.

STRUCTURE FILE UPDATES: 15 SEP 2004 HIGHEST RN 745743-57-1  
DICTIONARY FILE UPDATES: 15 SEP 2004 HIGHEST RN 745743-57-1

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more  
information enter HELP PROP at an arrow prompt in the file or refer  
to the file summary sheet on the web at:  
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> d his

(FILE 'HOME' ENTERED AT 10:00:16 ON 17 SEP 2004)

FILE 'REGISTRY' ENTERED AT 10:00:23 ON 17 SEP 2004  
L1 44451 S EP/PCT

FILE 'LREGISTRY' ENTERED AT 10:00:56 ON 17 SEP 2004  
L2 STR  
L3 STR L2  
L4 STR  
L5 STR

FILE 'REGISTRY' ENTERED AT 10:40:34 ON 17 SEP 2004  
L6 7 S (L2 OR L3) AND L4 AND L5

FILE 'HCA' ENTERED AT 10:42:00 ON 17 SEP 2004  
E POUTASSE ?/AU  
L7 21 S E4-E8  
L8 1 S L7 AND (ADHESIVE? AND COMPOSITION? AND FOIL?)/TI  
SEL L8 RN

FILE 'REGISTRY' ENTERED AT 10:43:05 ON 17 SEP 2004  
L9 5 S E1-E5

FILE 'LREGISTRY' ENTERED AT 10:43:28 ON 17 SEP 2004

L10 STR L2  
L11 SCR 2043

FILE 'REGISTRY' ENTERED AT 10:46:10 ON 17 SEP 2004  
L12 50 S (L10 OR L3) AND L4 AND L5 AND L11

FILE 'LREGISTRY' ENTERED AT 10:46:54 ON 17 SEP 2004  
L13 33 S (L10 OR L3) AND L4 AND L5 AND L11 FULL

FILE 'REGISTRY' ENTERED AT 11:00:05 ON 17 SEP 2004  
L14 16878 S (L10 OR L3) AND L4 AND L5 AND L11 FULL  
SAVE L14 THOMPSON877/A

FILE 'HCA' ENTERED AT 11:00:44 ON 17 SEP 2004  
L15 42106 S L14  
L16 28628 S L15 AND 1907-1994/PY,PRY  
L17 68684 S L1  
L18 89025 S ADHESIVES/CT  
L19 53607 S ELECTRIC CIRCUITS/CT  
E EPOXY RESINS, USES/CT  
L20 72820 S E2-E4  
L21 2969 S L16 AND L18  
L22 357 S L21 AND L19  
L23 287 S L22 AND L20  
L24 1079404 S CU OR COPPER?  
L25 201 S L23 AND L24  
L26 57519 S L24(2N)(FOIL? OR LEAF? OR LAYER? OR FILM? OR THINFILM?)  
L27 161 S L25 AND L26  
L28 0 S L7 AND L27

FILE 'REGISTRY' ENTERED AT 11:06:46 ON 17 SEP 2004  
L29 0 S L14 AND 28068-38-6  
L30 1 S L14 AND 25068-38-6

FILE 'HCA' ENTERED AT 11:07:37 ON 17 SEP 2004

FILE 'REGISTRY' ENTERED AT 11:07:45 ON 17 SEP 2004  
L31 16877 S L14 NOT L30

FILE 'HCA' ENTERED AT 11:08:00 ON 17 SEP 2004  
L32 16901 S L31  
L33 9331 S L32 AND 1907-1994/PY,PRY  
L34 108 S L33 AND (L18 AND L19 AND L20)  
L35 79 S L34 AND L24  
L36 59 S L35 AND L26

FILE 'LCA' ENTERED AT 11:10:35 ON 17 SEP 2004

FILE 'REGISTRY' ENTERED AT 11:11:38 ON 17 SEP 2004  
L37 16390 S L14 AND 3-10/NC  
L38 487 S L32 NOT L37  
L39 189 S L14 AND 1-2/NC  
L40 16689 S L14 NOT L39  
L41 4 S L9 AND PMS/CI

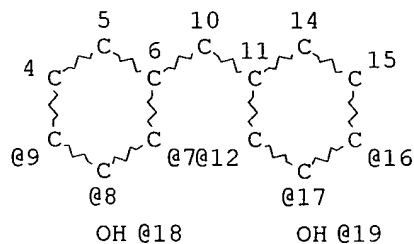
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L42 15827 S L40  
L43 52 S L42 AND L36

L44 1 S L41

FILE 'REGISTRY' ENTERED AT 11:15:20 ON 17 SEP 2004

=&gt; d que stat L14

L3 STR



VPA 18-7/8/9 U

VPA 19-12/17/16 U

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

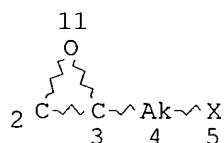
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE

L4 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

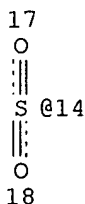
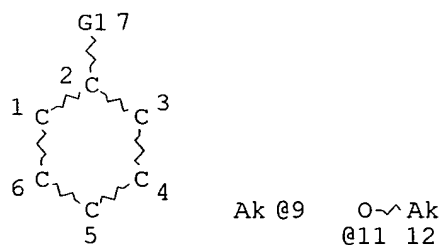
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L5 STR



(B-2)

where Q = H &amp;

T = AK, OAK, S -

6

O = since it can be -OH ie. phenol  
I left it off

VAR G1=9/11/14

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

L10 STR

G1^Cb^G1

1 2 3

*phenolic compd*

VAR G1=OH/NH2

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 2

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 3

STEREO ATTRIBUTES: NONE

L11 SCR 2043

L14 16878 SEA FILE=REGISTRY SSS FUL (L10 OR L3) AND L4 AND L5 AND L11

100.0% PROCESSED 164517 ITERATIONS ( 9 INCOMPLETE) 16878 ANSWERS

SEARCH TIME: 00.00.05

=> file hca

FILE 'HCA' ENTERED AT 11:15:53 ON 17 SEP 2004

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FILE COVERS 1907 - 16 Sep 2004 VOL 141 ISS 13

FILE LAST UPDATED: 16 Sep 2004 (20040916/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

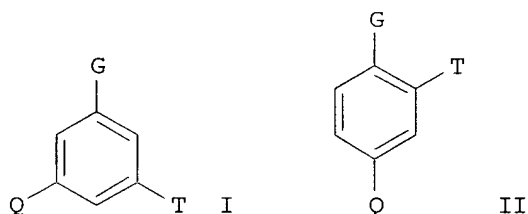
□□□THIS IS THE AUTHOR'S RECORDS

=&gt; d l44 cbib abs hitind hitstr

L44 ANSWER 1 OF 1 HCA COPYRIGHT 2004 ACS on STN

124:204382 Adhesive compositions and copper foil and copper-clad laminates using same. Poutasse, Charles A. (Gould Electronics Inc., USA). Eur. Pat. Appl. EP 691389 A1 19960110, 10 pp. DESIGNATED STATES: R: AT, DE, FR, GB, IT, LU. (English). CODEN: EPXXDW. APPLICATION: EP 1995-304380 19950622. PRIORITY: US 1994-267877 19940628.

GI

*applicants*

AB The adhesive composition comprises (A)  $\geq 1$  phenolic resol resin; and (B) the product made by reacting  $\geq 1$  difunctional epoxy resin, with  $\geq 1$  compound I or II [G, T, Q = CO<sub>2</sub>H, OH, SH, NH<sub>2</sub>, NHR<sub>1</sub>, (NHC(:NH))mNH<sub>2</sub>, R<sub>2</sub>CO<sub>2</sub>H, NR<sub>12</sub>, CONHR<sub>1</sub>, R<sub>2</sub>NR<sub>12</sub>, R<sub>2</sub>OH, R<sub>2</sub>SH, R<sub>2</sub>NH<sub>2</sub>, R<sub>2</sub>NHR<sub>1</sub>; R<sub>1</sub> = hydrocarbon group; R<sub>2</sub> = alkylene, alkylidene; m = 1-4; T can also be R<sub>1</sub>, OR<sub>1</sub> or SO<sub>2</sub>C<sub>6</sub>H<sub>4</sub>NH<sub>2</sub>; Q can also be H]. Copper foils having the adhesive composition adhered to  $\geq 1$  side of the foils have enhanced adhesion between the foils and dielec. substrates.

IC ICM C09J163-00

ICS C08L063-00; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT 174721-43-8 174721-49-4 174721-50-7

174721-51-8

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives for copper foils for manufacture of copper-clad laminates)

IT 174721-43-8 174721-49-4 174721-50-7

174721-51-8

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives for copper foils for manufacture of copper-clad laminates)

RN 174721-43-8 HCA

CN Phenol, 3-amino-, polymer with DER 664, Rutaphen IV 2441 and 9862I (9CI)  
(CA INDEX NAME)

CM 1

CRN 174593-67-0

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 174593-36-3

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 39421-68-6

CMF Unspecified

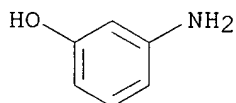
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 4

CRN 591-27-5

CMF C6 H7 N O



RN 174721-49-4 HCA

CN 1,3-Benzenediol, polymer with DER 664 and Rutaphen IV 2441 (9CI) (CA  
INDEX NAME)

CM 1

CRN 174593-36-3

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 39421-68-6

CMF Unspecified

CCI PMS, MAN

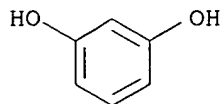
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 108-46-3

CMF C6 H6 O2





RN 174721-50-7 HCA  
CN Phenol, 3-amino-, polymer with Arofene 536ME and DER 664 (9CI) (CA INDEX NAME)

CM 1

CRN 174593-40-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

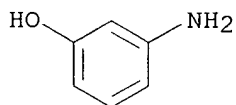
CM 2

CRN 39421-68-6  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 591-27-5  
CMF C6 H7 N O



RN 174721-51-8 HCA  
CN Phenol, 3-amino-, polymer with DER 664 and Rutaphen IV 2441 (9CI) (CA INDEX NAME)

CM 1

CRN 174593-36-3  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

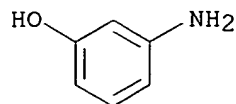
CM 2

CRN 39421-68-6  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 591-27-5  
CMF C6 H7 N O



=> d 143 1-52 cbib abs hitind hitstr

L43 ANSWER 1 OF 52 HCA COPYRIGHT 2004 ACS on STN

124:291686 Heat- and moisture-resistant adhesives for flexible printed circuit boards and printed circuit boards therefrom. Yamakawa, Atsushi; Hatano, Hiroshi (Toray Industries, Japan). Jpn. Kokai Tokkyo Koho JP 08027452 A2 19960130 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-166753 19940719.

AB The adhesives contain carboxy group-containing nitrile rubber, epoxy resins, inorg. ion-exchange substances  $MxOy.nH_2O$  ( $M$  = transition metal having 3-5 valences,  $y = 1-10$ ;  $n = 0-5$ ) and are resistant to heat and moisture. A polyimide film (Kapton 100V) was coated with an adhesive composition containing  $Al(OH)_3$  dispersion 15, 4,4'-diaminodiphenyl sulfone 15, carboxylated nitrile rubber (PNR-1H) 31.5,  $Sb_2O_5.2H_2O$  1.0, 60% Epikote 834 solution 17, and 60% Epikote 5050 solution 52 g, dried, laminated with **Cu foil**, and heated 2 h at 80°, 1 h at 110°, and 5 h at 150° to give a **Cu-clad laminate** with layer bonding strength 2.42 kg/cm initially and 1.05 kg/cm (anode) and 1.17 kg/cm (cathode) after 48 h at 121° and 100% relative humidity and 100 V.

IC ICM C09J163-00

ICS H05K001-02

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses**

RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); USES (Uses)

(adhesives, containing nitrile rubber and antimony oxide; heat- and moisture-resistant adhesives for flexible printed circuit boards)

IT **Adhesives**

(epoxy resins containing nitrile rubber and inorg. ion-exchange substances; heat- and moisture-resistant adhesives for flexible printed circuit boards)

IT Polyimides, uses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**films**, lamination with **copper foils**, for flexible printed circuit boards; heat- and moisture-resistant adhesives for)

IT **Electric circuits**

(printed, boards, flexible, heat- and moisture-resistant adhesives for)

IT **157220-54-7**, 4,4'-Diaminodiphenyl sulfone-Epikote 834-Epikote 5050 copolymer

RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); USES (Uses)

(adhesive, containing nitrile rubber and antimony oxide; heat- and moisture-resistant adhesives for flexible printed circuit boards)

IT 130527-52-5, Kapton 100V

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**film**, lamination with **copper foils**, for

flexible printed circuit boards; heat- and moisture-resistant adhesives for)

IT 157220-54-7, 4,4'-Diaminodiphenyl sulfone-Epikote 834-Epikote 5050 copolymer

RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); USES (Uses)

(adhesive, containing nitrile rubber and antimony oxide; heat- and moisture-resistant adhesives for flexible printed circuit boards)

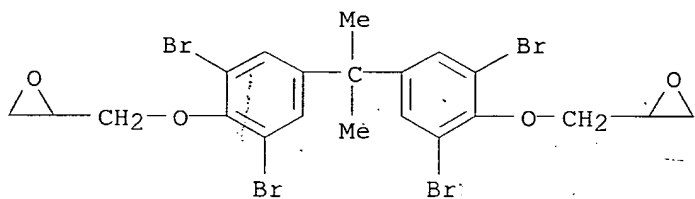
RN 157220-54-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxymethylene]]bis[oxirane] and 4,4'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 3072-84-2

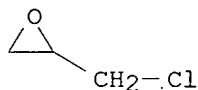
CMF C21 H20 Br4 O4



CM 2

CRN 106-89-8

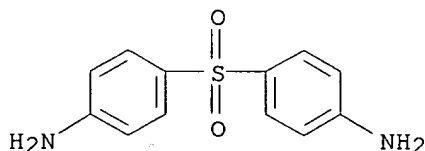
CMF C3 H5 Cl O



CM 3

CRN 80-08-0

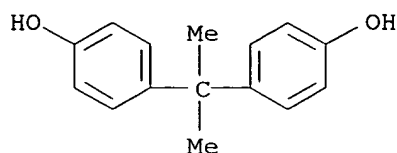
CMF C12 H12 N2 O2 S



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 2 OF 52 HCA COPYRIGHT 2004 ACS on STN

124:204360 Heat-resistant polyimide adhesive compositions for printed circuit boards. Imaizumi, Junichi; Mikami, Yoshikatsu; Asano, Yoshuki (Hitachi Chemical Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07258623 A2 19951009 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-79198 19940328.

AB The compns. comprise solns. containing polyamic acids having glass transition temperature (T<sub>g</sub>) after imidation step ≤220° 100, phenoxy resins (A) 5-40, and hardeners for A 2-20 parts. A N,N-dimethylacetamide varnish containing 100 parts polyamic acid [T<sub>g</sub> 200°, prepared from 439.5 g 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 360.5 g 1,3-bis(3-aminophenoxy)benzene] was mixed with 10 parts YP 50 (phenolic resin) and 4 parts H 4010 (alkylphenol) to prepare an adhesive composition. The composition was uniformly applied onto a film and dried to prepare an adhesive-backed film, which was pressed together with **Cu foil** at 180° for 30 min to give a laminate showing adhesive strength 2.4 KN/m (JIS C 6471) and exhibiting no debonding or blistering on immersion of the laminate in a solder bath for 1 min at 300°.

IC ICM C09J179-08

ICS C08L079-08; C09J171-10

ICI C09J179-08, C09J171-10

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Adhesives**

(heat-resistant, polyimide compns. for printed circuit boards)

IT **Epoxy resins, uses**

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(phenoxy, crosslinking agents; for manufacture of heat-resistant polyimide adhesive compns. for printed circuit boards)

IT **Electric circuits**

(printed, boards, heat-resistant polyimide adhesive compns. for)

IT **174629-97-1P**

RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(heat-resistant polyimide adhesive compns. for printed circuit boards)

IT **174629-97-1P**

RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(heat-resistant polyimide adhesive compns. for printed circuit boards)

RN 174629-97-1 HCA

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with (chloromethyl)oxirane, Hitanol 4010, 4,4'-(1-methylethylidene)bis[phenol] and 4,4'-[1,3-phenylenebis(1-methylethylidene)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 50957-91-0

CMF Unspecified

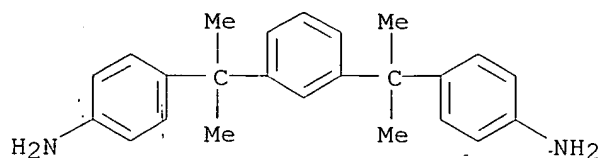
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 2687-27-6

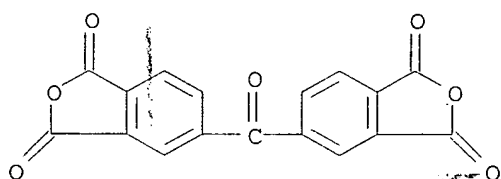
CMF C24 H28 N2



CM 3

CRN 2421-28-5

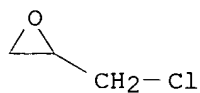
CMF C17 H6 O7



CM 4

CRN 106-89-8

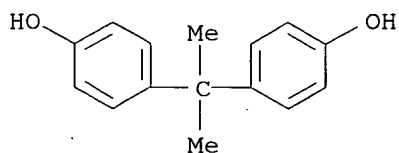
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 3 OF 52 HCA COPYRIGHT 2004 ACS on STN

124:178037 Electrically insulating epoxy resin compositions for **copper** laminates, and multilayer printed circuit boards prepared from them. Kawakami, Shin; Yoshino, Yutaka; Koinuma, Juichi; Takehara, Eiji (Nippon Cmk Kk, Japan; Taiyo Ink Mfg Co Ltd). Jpn. Kokai Tokkyo Koho JP 07330867 A2 19951219 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-145783 19940606.

AB The compns., with good adhesion, comprise (1) a mixture of epoxy resins from (a)  $\geq 1$  epoxy resin having softening point (Ts)  $50-110^{\circ}$  and (b)  $\geq 1$  epoxy resin (Ts  $\leq 50^{\circ}$ ), the weighted average (Tav) of the Ts in the mixture being  $30-90^{\circ}$ , (2) curing agents, and (3) diluents; the compns. are coated on a patterned double-sided printed circuit board and laminated with **Cu foil** on both sides. Thus, applying a mixture of EOCN 104S (Ts .apprx. $90^{\circ}$ ) in Carbitol acetate (I) solution (solid's content 80%) 31, DEN 431 (liquid) 30, 4,4'-diaminodiphenyl sulfone 15, I 6.5, BaSO<sub>4</sub> 17, and phthalocyanine green 0.5 part (Tav =  $50^{\circ}$ ) on a double-sided printed circuit board and laminating with **Cu foil** gave a laminate showing adhesion 1.3 kg/cm.

IC. ICM C08G059-20

ICS C08L063-00; H05K003-46

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 38, 76

ST elec circuit board epoxy adhesive; **copper** adhesive epoxy elec circuit; dielec adhesive epoxy circuit board

IT **Epoxy resins, uses**

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(elec. insulating epoxy resin adhesives for **copper** in manufacture of multilayer printed circuit boards)

IT Electric insulators and Dielectrics

(adhesive, elec. insulating epoxy resin adhesives for **copper** in manufacture of multilayer printed circuit boards)

IT **Adhesives**

(dielec., elec. insulating epoxy resin adhesives for **copper** in manufacture of multilayer printed circuit boards)

IT **Electric circuits**

(printed, boards, multilayer, elec. insulating epoxy resin adhesives for **copper** in manufacture of multilayer printed circuit boards)

IT 174085-56-4 174085-57-5 174085-58-6

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(elec. insulating epoxy resin adhesives for **copper** in manufacture of multilayer printed circuit boards)

IT 7727-43-7, Barifine BF 10

RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(elec. insulating epoxy resin compns. for **copper** laminates and multilayer printed circuit boards prepared thereof)

IT 174085-56-4 174085-58-6

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(elec. insulating epoxy resin adhesives for **copper** in manufacture of multilayer printed circuit boards)

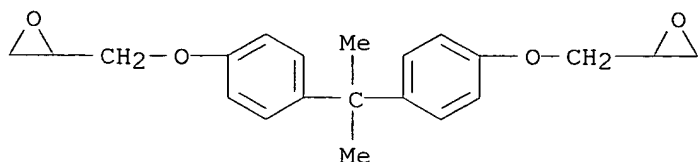
RN 174085-56-4 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, 4,4'-methylenebis[benzenamine] and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 1675-54-3

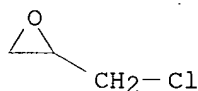
CMF C21 H24 O4



CM 2

CRN 106-89-8

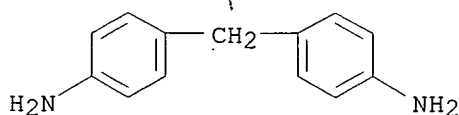
CMF C3 H5 Cl O



CM 3

CRN 101-77-9

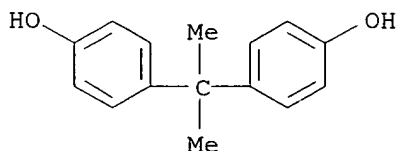
CMF C13 H14 N2



CM 4

CRN 80-05-7

CMF C15 H16 O2



RN 174085-58-6 HCA

CN Guanidine, cyano-, polymer with AER-ECN 299, (chloromethyl)oxirane, DEN 431 and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 119977-50-3

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 37348-52-0

CMF Unspecified

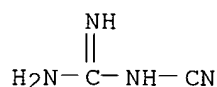
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 461-58-5

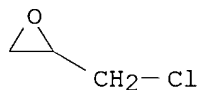
CMF C2 H4 N4



CM 4

CRN 106-89-8

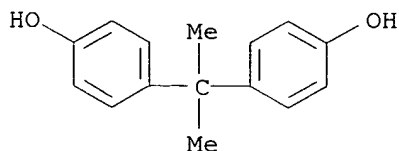
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 4 OF 52 HCA COPYRIGHT 2004 ACS on STN

124:119724 Thermosetting resin compositions, their adhesive sheets, and said adhesive-containing metal foils, polyimide films, and their metal foil laminates. Suzuki, Takayuki; Shibata, Katsuji (Hitachi Chemical Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07278258 A2 19951024 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-71184 19940411.

AB Title compns. with high heat resistance, useful for printed circuits, composite lead frame, laminates, etc., comprise polymaleimides or aminobismaleimides, polyfunctional epoxy resins, hardeners, and linear



epoxy resins obtained from difunctional epoxy resins and difunctional phenols at epoxy/OH = 1/(0.9-1.1). Their adhesive sheets, metal foils having said adhesives, polyimide films having said adhesives on one or both sides, polyimide films laminated with a metal foil on one side and having said adhesives on the other side, and polyimide films laminated with metal foils on the other sides are also claimed. Thus, bisphenol A epoxy resin (177.5 epoxy equivalent) (I) 177.5, bisphenol A (115.5 OH equivalent)

115.5, and NaOH 1.77 g were heated at 120° for 4 h in 547.9 g DMF to give an epoxy resin, 100 g (30% solid) of which was mixed with I 15, N,N'-(4,4'-diphenylmethane)bismaleimide 15, dicyandiamide 1, and DMF 69 g. The varnish thereby obtained was applied on a glass plate to obtain a 25- $\mu$ m thickness sheet, and **Cu-foils** were hot pressed on both sides to give a **Cu-laminated** flexible board showing no blisters by solder bathing and good wire bonding at 180°.

IC ICM C08G059-14

ICS C08G059-40; C09J007-00; C09J007-02; C09J163-00

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Adhesives**

Heat-resistant materials

(thermosetting adhesives containing epoxy resins with good heat-resistance for polyimide-metal foil laminated films for electronic devices)

IT **Epoxy resins, uses**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermosetting adhesives containing epoxy resins with good heat-resistance for polyimide-metal foil laminated films for electronic devices)

IT **Electric circuits**

(printed, thermosetting adhesives containing epoxy resins with good heat-resistance for polyimide-metal foil laminated films for electronic devices)

IT **65956-45-8P 173072-63-4P**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermosetting adhesives containing epoxy resins with good heat-resistance for polyimide-metal foil laminated films for electronic devices)

IT 7440-50-8, **Copper**, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(thermosetting adhesives containing epoxy resins with good heat-resistance for polyimide-metal foil laminated films for electronic devices)

IT **65956-45-8P 173072-63-4P**

RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(thermosetting adhesives containing epoxy resins with good heat-resistance for polyimide-metal foil laminated films for electronic devices)

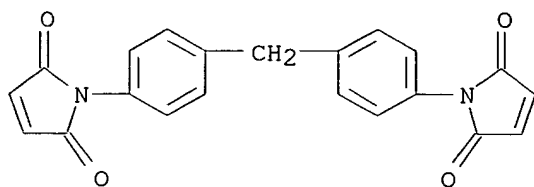
RN 65956-45-8 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 1,1'-(methylenedi-4,1-phenylene)bis[1H-pyrrole-2,5-dione] and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

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CRN 13676-54-5

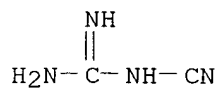
CMF C21 H14 N2 O4



CM 2

CRN 461-58-5

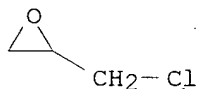
CMF C2 H4 N4



CM 3

CRN 106-89-8

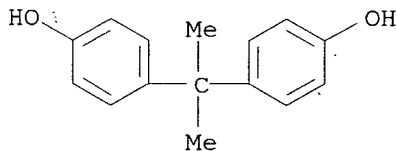
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



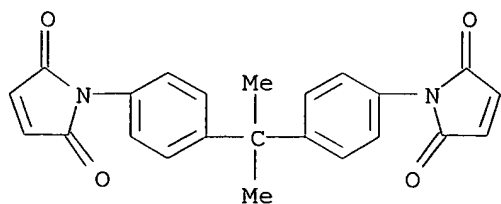
RN 173072-63-4 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 1,1'-(methylenedi-4,1-phenylene)bis[1H-pyrrole-2,5-dione], 4,4'-(1-methylethylidene)bis[phenol] and 1,1'-[(1-methylethylidene)di-4,1-phenylene]bis[1H-pyrrole-2,5-dione] (9CI) (CA INDEX NAME)

CM 1

CRN 21842-06-8

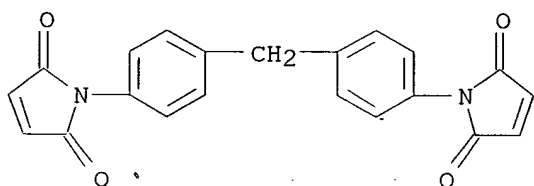
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CM 2

CRN 13676-54-5

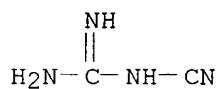
CMF C21 H14 N2 O4



CM 3

CRN 461-58-5

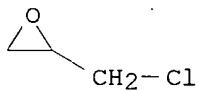
CMF C2 H4 N4



CM 4

CRN 106-89-8

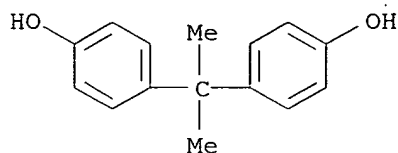
CMF C3 H5 C1 O



CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 5 OF 52 HCA COPYRIGHT 2004 ACS on STN

123:342764 Adhesives for multilayer printed circuit boards. Nakamichi, Sei (Sumitomo Bakelite Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 07202418 A2 19950804 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-334374 19931228.

AB The adhesives simplifying the lamination process and giving flexible printed circuit boards without using glass prepregs comprise 20-70% high-mol.-weight ( $\geq 10,000$ ) epoxy resins and 10-50% liquid epoxy resins or epoxy-reactive diluents. An adhesive varnish was prepared containing bisphenol A epoxy resin (mol. weight 30,000) 150, bisphenol F epoxy resin (Epiclon 830) 120, microcapsulated 2-methylimidazole 120, and silane coupling agent 10 parts in MEK, coated on **Cu foils**, and the coated foils were used to sandwich an interlayer circuit board clad both sides with a **Cu foil** and hot pressed to give a printed circuit board.

IC ICM H05K003-38

ICS C09J007-02; C09J163-00; H05K003-46

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses**

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(adhesives for multilayer printed circuit boards)

IT **Adhesives**

(epoxy resins; adhesives for multilayer printed circuit boards)

IT **Electric circuits**

(printed, boards, adhesives for multilayer printed circuit boards)

IT **103413-45-2**

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(adhesives for multilayer printed circuit boards)

IT **103413-45-2**

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(adhesives for multilayer printed circuit boards)

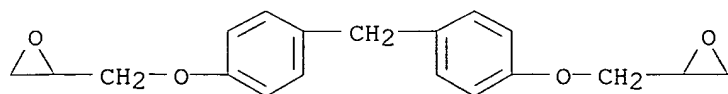
RN 103413-45-2 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 2095-03-6

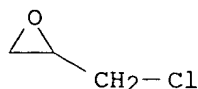
CMF C19 H20 O4



CM 2

CRN 106-89-8

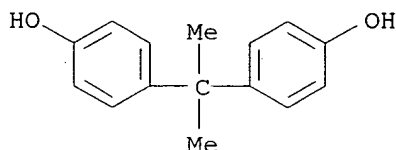
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 6 OF 52 HCA COPYRIGHT 2004 ACS on STN

123:316494 Epoxy resin and rubber adhesive composition for electric printed circuit board with good ion migration prevention. Hibino, Yutaka (Sumitomo Electric Industries, Japan). Jpn. Kokai Tokkyo Koho JP 07231162 A2 19950829 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-41937 19940215.

AB The composition comprises an epoxy resin containing 10-70 phr NBR (ion impurity  $\leq 1000$  ppm). An elec. circuit board from a polyimide, a **Cu foil** and Epikote 828 containing 30 phr Nipol 1043 (impurity 185 ppm) and 35 phr diaminodiphenylsulfone showed good elec. resistivity and good ion migration resistance.

IC ICM H05K003-38

ICS C09J163-00; H05K001-03

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 37, 39

IT **Epoxy resins, uses**

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(NBR blend, adhesive; epoxy resin and rubber adhesive composition for elec. printed circuit board with good ion migration prevention)

IT **Adhesives**

(epoxy resin and rubber adhesive composition for elec. printed circuit board with good ion migration prevention)

IT **Electric circuits**

(printed, boards, epoxy resin and rubber adhesive composition for elec. printed circuit board with good ion migration prevention)

IT **58891-11-5 136291-21-9 170589-37-4 170589-38-5**

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(NBR blend, adhesive; epoxy resin and rubber adhesive composition for elec. printed circuit board with good ion migration prevention)

IT **58891-11-5 170589-37-4 170589-38-5**

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(NBR blend, adhesive; epoxy resin and rubber adhesive composition for elec.

printed circuit board with good ion migration prevention)

RN 58891-11-5 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and ar,ar'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

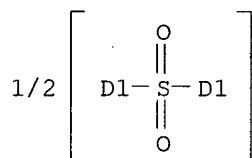
CRN 27133-91-1

CMF C12 H12 N2 O2 S

CCI IDS



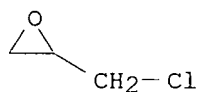
D1-NH<sub>2</sub>



CM 2

CRN 106-89-8

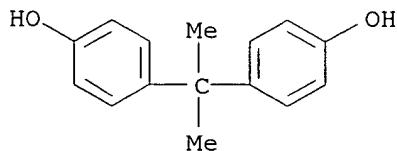
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



RN 170589-37-4 HCA

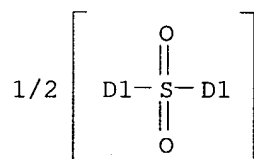
CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and ar,ar'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 27133-91-1

CMF C12 H12 N2 O2 S

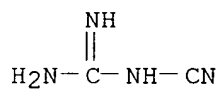
CCI IDS

D1-NH<sub>2</sub>

CM 2

CRN 461-58-5

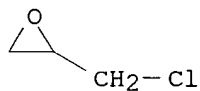
CMF C2 H4 N4



CM 3

CRN 106-89-8

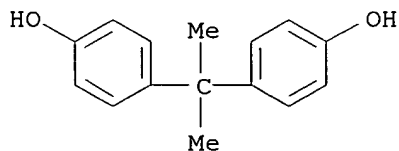
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



RN 170589-38-5 HCA  
CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, Epikote 154,  
4,4'-(1-methylethylidene)bis[phenol] and ar,ar'-sulfonylbis[benzenamine]  
(9CI) (CA INDEX NAME)

CM 1

CRN 63939-13-9  
CMF Unspecified  
CCI PMS, MAN

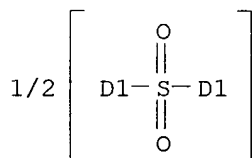
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 27133-91-1  
CMF C12 H12 N2 O2 S  
CCI IDS

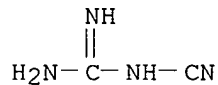


D1-NH<sub>2</sub>



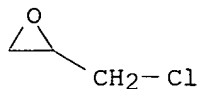
CM 3

CRN 461-58-5  
CMF C2 H4 N4



CM 4

CRN 106-89-8  
CMF C3 H5 Cl O

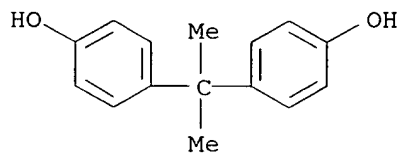




CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 7 OF 52 HCA COPYRIGHT 2004 ACS on STN

123:288843 Thermosetting resin compositions containing aromatic polyamide oligomers and epoxy resins. Nanaumi, Ken; Takahashi, Atsushi (Hitachi Chemical Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07082344 A2 19950328 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-232141 19930920.

AB . The compns. useful as adhesives in manufacture of printed circuit boards contain carboxy-terminated aromatic polyamide oligomers, epoxy resins containing

≥2 functional groups, and curing accelerators. Thus, reacting 68.90 g 1,3-bis[2-(4-aminophenyl)isopropyl]benzene with 48.75 g isophthaloyl chloride gave an oligomer, 100 parts of which were mixed with 30 parts ESCN (o-cresol novolak epoxy resin) and 3 parts 2-ethyl-4-methylimidazole in cyclohexanone to give an adhesive varnish. The varnish was applied on **Cu foils** then the foils were laminated and hot pressed to give a test piece showing good adhesion and heat resistance.

IC ICM C08G059-40

ICS C08G059-40; C09J163-00; H05K001-03

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST thermosetting adhesive printed wiring board; elec circuit board thermosetting adhesive; arom polyamide oligomer thermosetting resin; **copper** laminate adhesive thermosetting resin

IT **Adhesives**

(thermosetting aromatic polyamide-epoxy resins as adhesives for elec. circuit boards)

IT **Epoxy resins, uses**

RL: TEM (Technical or engineered material use); USES (Uses)

(thermosetting aromatic polyamide-epoxy resins as adhesives for elec. circuit boards)

IT **Epoxy resins, uses**

RL: TEM (Technical or engineered material use); USES (Uses)

(phenolic, novolak, thermosetting aromatic polyamide-epoxy resins as adhesives for elec. circuit boards)

IT **Electric circuits**

(printed, boards, thermosetting aromatic polyamide-epoxy resins as adhesives for elec. circuit boards)

IT 7440-50-8, **Copper**, miscellaneous

RL: MSC (Miscellaneous)

(**foils**, circuit boards; thermosetting aromatic polyamide-epoxy resins as adhesives for elec. circuit boards)

IT 99-63-8DP, 1,3-Benzenedicarbonyl dichloride, polymers with o-cresol

novolak epoxy resin and bis[2-(4-aminophenyl)isopropyl]benzene  
2687-27-6DP, polymers with o-cresol novolak epoxy resin and isophthaloyl  
chloride 35039-49-7P 169753-69-9P 169753-70-2P  
169753-72-4P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
use); PREP (Preparation); USES (Uses)  
(thermosetting aromatic polyamide-epoxy resins as adhesives for elec.  
circuit boards)

IT 169753-69-9P 169753-70-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
use); PREP (Preparation); USES (Uses)  
(thermosetting aromatic polyamide-epoxy resins as adhesives for elec.  
circuit boards)

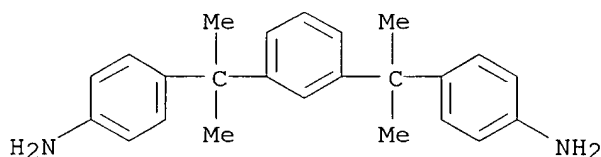
RN 169753-69-9 HCA

CN 1,3-Benzenedicarbonyl dichloride, polymer with (chloromethyl)oxirane,  
4,4'-(1-methylethylidene)bis[phenol] and 4,4'-[1,3-phenylenebis(1-  
methylethylidene)]bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 2687-27-6

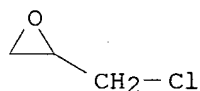
CMF C24 H28 N2



CM 2

CRN 106-89-8

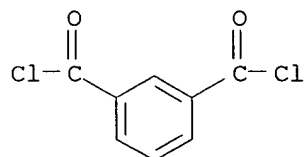
CMF C3 H5 Cl O



CM 3

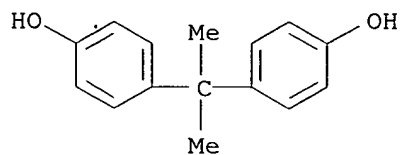
CRN 99-63-8

CMF C8 H4 Cl2 O2



CM 4

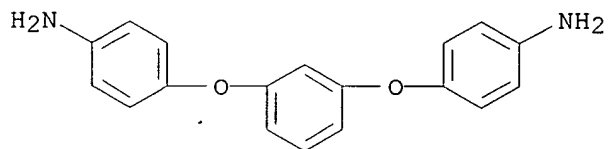
CRN 80-05-7  
CMF C15 H16 O2



RN 169753-70-2 HCA  
CN 1,4-Benzenedicarbonyl dichloride, polymer with (chloromethyl)oxirane,  
4,4'-(1-methylethylidene)bis[2,6-dibromophenol] and 4,4'-[1,3-  
phenylenebis(oxy)]bis[benzenamine] (9CI) (CA INDEX NAME)

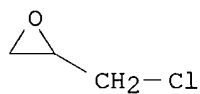
CM 1

CRN 2479-46-1  
CMF C18 H16 N2 O2



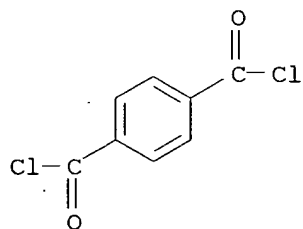
CM 2

CRN 106-89-8  
CMF C3 H5 Cl O



CM 3

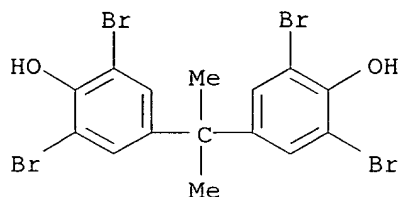
CRN 100-20-9  
CMF C8 H4 Cl2 O2



CM 4

CRN 79-94-7

CMF C15 H12 Br4 O2



L43 ANSWER 8 OF 52 HCA COPYRIGHT 2004 ACS on STN

123:114569 Adhesive compositions and their uses for flexible printed circuit boards and TAB tapes. Inagaki, Tsutomu; Kabashima, Akihiro (Toray Industries, Japan). Jpn. Kokai Tokkyo Koho JP 06346042 A2

19941220 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-138458 19930610.

AB The comps. comprise polyamides and phenolic resins containing novolaks and resols at a weight ratio of novolak/resol 0.05-1. Thus, a Upilex 75S (polyimide) film was coated with MeOH/PhCl containing Priadit 2053 100, PSM 4326 (novolak) 16, and PS 2780 (resol) 64 parts, dried, laminated with a **Cu foil**, and heated at 80-150° for 11 h to give a TAB tape. A flexible printed circuit board prepared from the TAB tape by a conventional method showed heat distortion temperature  $\geq 200^\circ$ , peel strength 1.1 kg/cm, and dielec. breakdown time  $\geq 500$  h at 130° and 100 V.

IC ICM C09J177-06

ICS C09J007-02; C09J161-06; C09J163-00; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses**

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(polyamide-novolak-resol blend adhesives for flexible printed circuit boards and TAB tapes)

IT **Adhesives**

(dielec., polyamide-novolak-resol blend adhesives for flexible printed circuit boards and TAB tapes)

IT **Electric circuits**

(printed, boards, flexible, polyamide-novolak-resol blend adhesives for flexible printed circuit boards and TAB tapes)

IT 123-99-9D, Azelaic acid, polymers with C36 dicarboxylic acids and hexamethylenediamine 124-09-4D, Hexamethylenediamine, polymers with C36 dicarboxylic acids 82115-71-7, Macromelt 6900 85189-39-5, Macromelt 6901 91728-08-4, PS 2780 158164-04-6, Priadit 2053 161107-77-3, PSM 4326 **166119-50-2**

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(polyamide-novolak-resol blend adhesives for flexible printed circuit boards and TAB tapes)

IT 7440-50-8, **Copper**, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(polyamide-novolak-resol blend adhesives for flexible printed circuit boards and TAB tapes)

IT **166119-50-2**

RL: PRP (Properties); TEM (Technical or engineered material use); USES

## (Uses)

(polyamide-novolak-resol blend adhesives for flexible printed circuit boards and TAB tapes)

RN 166119-50-2 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, Resitop PS 2780 and Resitop PSM 4326 (9CI) (CA INDEX NAME)

CM 1

CRN 161107-77-3

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 91728-08-4

CMF Unspecified

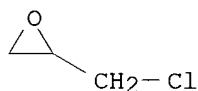
CCI MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 106-89-8

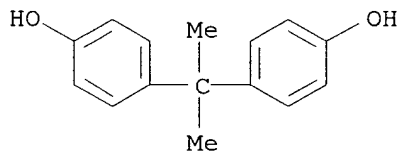
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 9 OF 52 HCA COPYRIGHT 2004 ACS on STN

123:11304 Bonding of metal foil to plastic laminate for circuit board.

Sugiura, Satoshi; Ootsuka, Minoru; Sakaguchi, Tatsu; Kamata, Mitsutoshi (Shin Kobe Electric Machinery, Japan). Jpn. Kokai Tokkyo Koho JP 06335992 A2 19941206 Heisei, 10 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1994-52400 19940324. PRIORITY: JP 1993-71611 19930330.

AB Laminates with good foil adhesion, useful for printed circuits, are prepared by coating a metal foil with an adhesive comprising nitrile rubber or acrylic rubber, an epoxy resin, a phenolic resin, and an inorg. filler, pressing the adhesive layer against a plastic laminate, and heating. A **Cu foil** was coated with a mixture of carboxy-terminated nitrile rubber, bisphenol A epoxy resin, TD 2093 (novolak),  $\text{Al}(\text{OH})_3$ , 2-ethyl-4-methylimidazole, cellosolve acetate, and MEK, heated 60 min at

160°, pressed against a laminate prepared from glass fabric and an epoxy resin, and heated to give a laminate showing foil peel strength 1.76 kg/cm, solder heat resistance at 300° 85 s, good blocking resistance, and good thermal cycling resistance.

IC ICM B32B015-08

ICS B32B007-02; B32B031-12

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST nitrile rubber adhesive **copper** lamination; acrylic rubber adhesive lamination **copper**; epoxy adhesive lamination **copper foil**; phenolic adhesive lamination **copper foil**; elec circuit board **copper** adhesive; soldering resistance adhesive **copper** lamination; circuit board lamination **copper** adhesive

IT **Adhesives**

(for **copper foil** in manufacture of circuit boards)

IT **Epoxy resins, uses**

Siloxanes and Silicones, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(in adhesive for **copper foil** in manufacture of circuit board)

IT Rubber, synthetic

RL: TEM (Technical or engineered material use); USES (Uses)

(acrylic, in adhesive for **copper foil** in manufacture of circuit board)

IT Rubber, nitrile, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(carboxy-terminated, in adhesive for **copper foil** in manufacture of circuit board)

IT Phenolic resins, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(epoxy, novolak, in adhesive for **copper foil** in manufacture of circuit board)

IT **Epoxy resins, uses**

RL: TEM (Technical or engineered material use); USES (Uses)

(phenolic, novolak, in adhesive for **copper foil** in manufacture of circuit board)

IT **Electric circuits**

(printed, boards, adhesive for lamination of **copper foil** in manufacture of)

IT 1344-28-1, Aluminum oxide, uses

RL: MOA (Modifier or additive use); USES (Uses)

(fillers; in adhesive for **copper foil** in manufacture of circuit board)

IT 7440-50-8, **Copper**, uses

RL: DEV (Device component use); USES (Uses)

(**foil**; adhesives for lamination in manufacture of circuit boards)

IT **27754-24-1 40216-08-8**

RL: TEM (Technical or engineered material use); USES (Uses)

(in adhesive for **copper foil** in manufacture of circuit board)

IT 9003-18-3

RL: TEM (Technical or engineered material use); USES (Uses)

(rubber, carboxy-terminated, in adhesive for **copper foil** in manufacture of circuit board)

IT **27754-24-1 40216-08-8**

RL: TEM (Technical or engineered material use); USES (Uses)

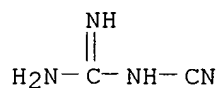
(in adhesive for **copper foil** in manufacture of circuit

board)  
RN 27754-24-1 HCA  
CN Guanidine, cyano-, polymer with (chloromethyl)oxirane and  
4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 461-58-5

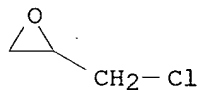
CMF C2 H4 N4



CM 2

CRN 106-89-8

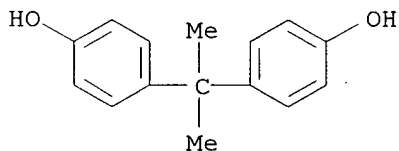
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2

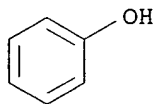


RN 40216-08-8 HCA  
CN Formaldehyde, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and phenol (9CI) (CA INDEX NAME)

CM 1

CRN 108-95-2

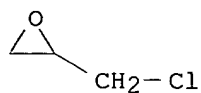
CMF C6 H6 O



CM 2

CRN 106-89-8

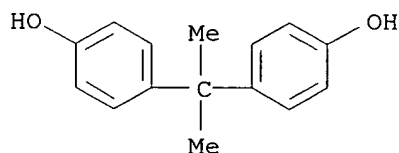
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

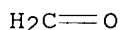
CMF C15 H16 O2



CM 4

CRN 50-00-0

CMF C H2 O



L43 ANSWER 10 OF 52 HCA COPYRIGHT 2004 ACS on STN

121:282088 Heat-resistant epoxy adhesive for bonding **copper****foil** for flexible electric circuit boards. Yabuta, Katsunori;

Nojiri, Hitoshi (Kanegafuchi Chemical Ind, Japan). Jpn. Kokai Tokkyo Koho

JP 06145628 A2 **19940527** Heisei, 4 pp. (Japanese). CODEN:

JKXXAF. APPLICATION: JP 1992-321146 19921104.

AB The adhesive, with good storage stability, comprise epoxy resin,  $\geq 1$  alicyclic amine, and  $\geq 1$  aromatic amine. A board prepared from**Cu foil**, polyimide, and adhesive composition of Epikote 1001

70, Platabond M 276 30, diaminodiphenylsulfone 4.8, and IPDI 1.6 parts in

toluene and iso-PrOH mixture showed adhesion 2.3 kg/cm at 20° and 0.6

at 150° and good stability at B-stage.

IC ICM C09J163-00

ICS C08G059-50

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses**

RL: TEM (Technical or engineered material use); USES (Uses)

(heat-resistant epoxy adhesive for bonding **copper****foil** for flexible elec. circuit boards)IT **Adhesives**

(heat-resistant, heat-resistant epoxy adhesive for bonding

**copper foil** for flexible elec. circuit boards)IT **Electric circuits**

(printed, boards, heat-resistant epoxy adhesive for bonding

**copper foil** for flexible elec. circuit boards)IT 7440-50-8, **Copper**, uses **159044-47-0****159044-48-1**



RL: TEM (Technical or engineered material use); USES (Uses)  
 (heat-resistant epoxy adhesive for bonding **copper**  
**foil** for flexible elec. circuit boards)

IT **159044-47-0 159044-48-1**

RL: TEM (Technical or engineered material use); USES (Uses)  
 (heat-resistant epoxy adhesive for bonding **copper**  
**foil** for flexible elec. circuit boards)

RN 159044-47-0 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane,  
 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane and  
 ar,ar'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

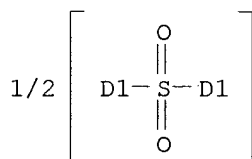
CRN 27133-91-1

CMF C12 H12 N2 O2 S

CCI IDS



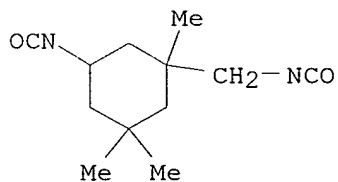
D1-NH<sub>2</sub>



CM 2

CRN 4098-71-9

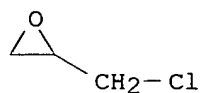
CMF C12 H18 N2 O2



CM 3

CRN 106-89-8

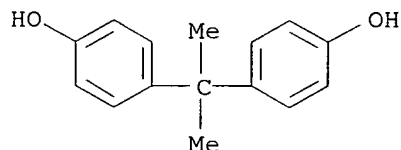
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



RN 159044-48-1 HCA

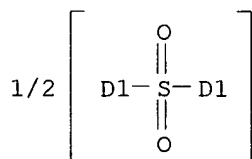
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, methanediamine and ar,ar'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 27133-91-1

CMF C12 H12 N2 O2 S

CCI IDS

D1-NH<sub>2</sub>

CM 2

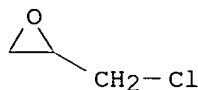
CRN 2372-88-5

CMF C H6 N2

H<sub>2</sub>N-CH<sub>2</sub>-NH<sub>2</sub>

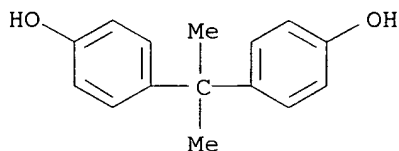
CM 3

CRN 106-89-8  
CMF C3 H5 Cl O



CM 4

CRN 80-05-7  
CMF C15 H16 O2



L43 ANSWER 11 OF 52 HCA COPYRIGHT 2004 ACS on STN

121:135845 Nitrile rubber and epoxy resin adhesive compositions for fire-resistant flexible printed circuit boards. Kobayashi, Shoji; Matsumoto, Satoshi; Fujimoto, Hideki (Toray Industries, Japan). Jpn. Kokai Tokkyo Koho JP 06049427 A2 **19940222** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-203762 19920730.

AB The adhesives, with good transparency and good elec. insulation and useful for preparation of circuit boards, comprise a mixture of 30-60% carboxy-containing

NBR and 60-70% epoxy resins containing 10-50 phr Al hydroxide, where the ratio of active hydrogen (H) in the hardener and epoxy content (E) in the epoxy resins is 0.2-0.65. An elec. circuit board from **Cu foil** and a laminate from Kapton 100 H (polyimide) film and a coating solution mixture of PNR 1H (NBR) 45, Epikote 5050 40, and Epikote 834 15% containing 4.1 phr 4,4'-diaminodiphenylsulfone and 30 phr Al hydroxide (the ratio of H:E = 0.41) showed Br content 18.8%, adhesion 2.2 kg/cm, elec. resistivity 4 + 1013  $\Omega$ , and UL-94 flame test rating V-0.

IC ICM C09J163-00

ICS C08L063-00; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST NBR blend epoxy resin adhesive; **copper** elec circuit adhesive epoxy; polyimide **copper** laminate NBR blend adhesive; flexible fire resistant elec board; transparent adhesive printed circuit board

IT **Adhesives**

(epoxy resin and NBR blends, the ratio of active hydrogen and epoxy content in, for flexible and fire-resistant printed circuit boards)

IT Polyimides, uses

RL: USES (Uses)

(**films**, laminated with **copper foil**, adhesives for, epoxy resin and nitrile rubber blends as, for flexible and fire-resistant printed circuit boards)

IT **Epoxy resins, uses**

RL: USES (Uses)

(the ratio of active hydrogen and epoxy content in, nitrile rubber

blends, adhesives, for flexible and fire-resistant printed circuit boards)

IT **Electric circuits**

(printed, boards, polyimide and **copper** laminates, adhesives for, epoxy resin and NBR blends as, flexible and fire-resistant)

IT 25036-53-7, Kapton 100H

RL: USES (Uses)

(**films**, laminated with **copper foil**, adhesives for, epoxy resin and nitrile rubber blends as, for flexible and fire-resistant printed circuit boards)

IT 7440-50-8, **Copper**, uses

RL: USES (Uses)

(**foil**, laminated with polyimides, adhesives for, epoxy resin and nitrile rubber blends as, for flexible and fire-resistant printed circuit boards)

IT **157220-54-7**

RL: USES (Uses)

(the ratio of active hydrogen and epoxy content in, nitrile rubber blends, adhesives, for flexible and fire-resistant printed circuit boards)

IT **157220-54-7**

RL: USES (Uses)

(the ratio of active hydrogen and epoxy content in, nitrile rubber blends, adhesives, for flexible and fire-resistant printed circuit boards)

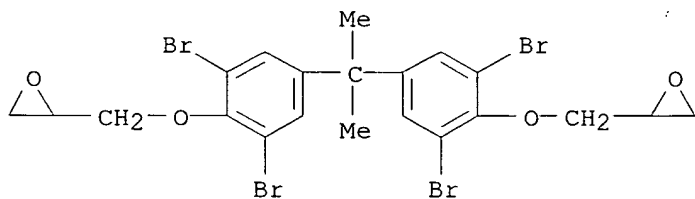
RN 157220-54-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxymethylene]]bis[oxirane] and 4,4'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 3072-84-2

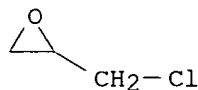
CMF C21 H20 Br4 O4



CM 2

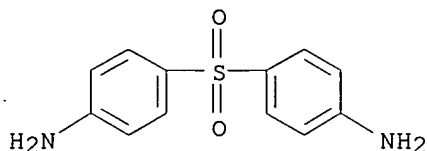
CRN 106-89-8

CMF C3 H5 Cl O



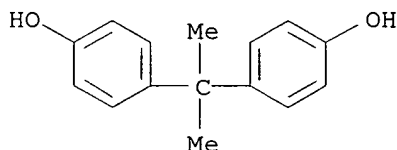
CM 3

CRN 80-08-0  
CMF C12 H12 N2 O2 S



CM 4

CRN 80-05-7  
CMF C15 H16 O2



L43 ANSWER 12 OF 52 HCA COPYRIGHT 2004 ACS on STN

121:59224 Adhesive sheets especially for the manufacture flexible printed circuit boards. Kato, Juji (Sekisui Chemical Co. Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 06017012 A2 **19940125** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-176626 19920703.

AB The adhesive sheets contain a pressure-sensitive adhesive layer over ≥1 side of a heat-fusible or thermosetting adhesive sheet. Preparing a thermosetting resin adhesive sheet by coating an epoxy resin (Epikote 1001) containing di-Bu phthalate, and dicyandiamide over a coated parting sheet, transfer coating over the epoxy resin sheet an acrylic acid-Bu acrylate-Desmodur TH copolymer adhesive layer, roll pressing the pressure-sensitive layer against a glass epoxy sheet, removing the parting sheet, and hot pressing the epoxy resin adhesive sheet over a **Cu foil** gave a laminate for manufacture of flexible printed circuit boards.

IC ICM C09J007-00

ICS H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

IT **Epoxy resins, uses**

Polyesters, uses

RL: USES (Uses)

(adhesive sheet laminate, for manufacture of flexible printed circuit boards)

IT **Electric circuits**

(printed, boards, flexible, adhesive sheets for manufacture of, containing pressure-sensitive adhesive layer and thermosetting layer)

IT **Adhesives**

(sheets, containing heat-fusible and thermosetting resin, for manufacture of flexible printed circuit boards)

IT **27754-24-1**, Dicyandiamide-Epikote 1001 copolymer 100092-83-9,

Vylon 30 150275-06-2

RL: USES (Uses)

(adhesive sheet laminate, for manufacture of flexible printed circuit boards)

IT 27754-24-1, Dicyandiamide-Epikote 1001 copolymer

RL: USES (Uses)

(adhesive sheet laminate, for manufacture of flexible printed circuit boards)

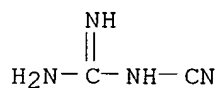
RN 27754-24-1 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethyldiene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 461-58-5

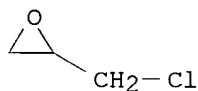
CMF C2 H4 N4



CM 2

CRN 106-89-8

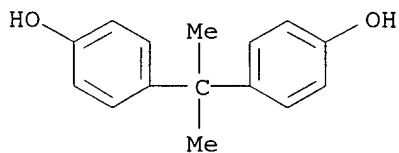
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2

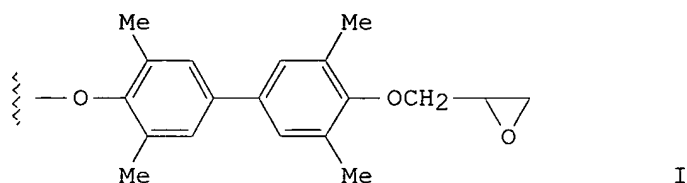
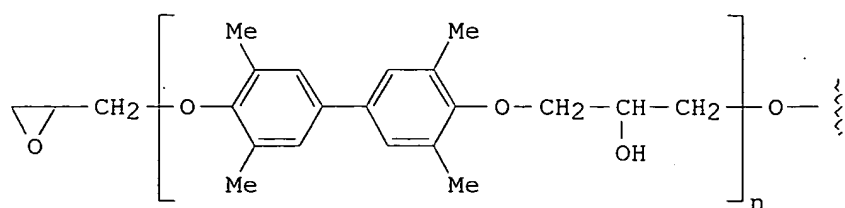


L43 ANSWER 13 OF 52 HCA COPYRIGHT 2004 ACS on STN

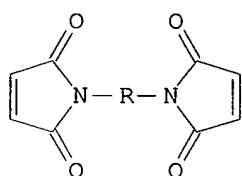
120:136623 Heat-resistant epoxy resin adhesive compositions. Takeda, Toshimitsu; Yamazaki, Hajime (Yokohama Rubber Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 05239426 A2 19930917 Heisei, 6 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1992-45263 19920303.

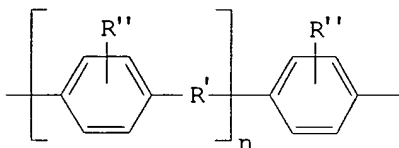
GI



I



II



III

- AB Title compns., useful for printed circuit boards, etc., comprise 100 parts epoxy resins containing biphenyl-based epoxy resins I ( $n = 0-3$ ) and epichlorohydrin-bisphenol A-based epoxy resins (epoxy equiv  $\leq 500$ ) at 1:(1.0-4.0) ratio, 3-20 parts bismaleimide compds. II [ $R =$  arylene group III;  $R' = \text{CH}_2, \text{O}, \text{SO}_2$ ,  $R'' = \text{H}$ , C1-4 alkyl;  $n = 0-3$ ], and aromatic amines. Thus, an adhesive containing YX 4000 50, Epiclon 1050 (epoxy equiv 450-500) 50, MB 7000 (bismaleimide) 3, C 600 (3,3'-diaminodiphenyl sulfone) 24, and MEK 54 parts was applied on a **Cu foil**, dried, laminated with an Al plate, and treated at 150-200° for 2 h to give a test piece showing 90° peel strength 2.4 kg/cm at room temperature and 1.8 at 150°.
- IC ICM C09J163-00  
ICS C09J163-00
- CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76
- IT **Epoxy resins, uses**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing bismaleimides and amines, with good heat resistance, for printed circuit boards)
- IT **Adhesives**  
(heat-resistant, containing epoxy resins and bismaleimides and amines, for printed circuit boards)
- IT **Electric circuits**  
(printed, boards, adhesives for, containing epoxy resins and bismaleimides and amines, with good heat resistance)
- IT 7429-90-5, Aluminum, uses 7440-50-8, **Copper**, uses  
RL: USES (Uses)  
(laminates, adhesives for, containing epoxy resins and bismaleimides and amines, with good heat resistance)
- IT **153411-53-1P 153411-54-2P 153411-55-3P**  
RL: PREP (Preparation)  
(preparation of, adhesives, heat-resistant, for printed circuit boards)

IT 153411-53-1P 153411-55-3P

RL: PREP (Preparation)

(preparation of, adhesives, heat-resistant, for printed circuit boards)

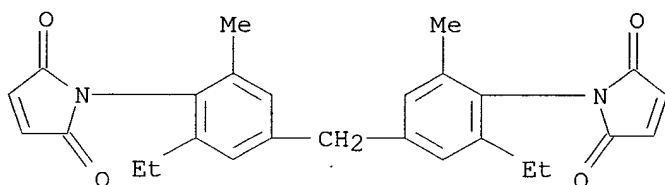
RN 153411-53-1 HCA

CN 1H-Pyrrole-2,5-dione, 1,1'-[methylenebis(2-ethyl-6-methyl-4,1-phenylene)]bis-, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol], 3,3'-sulfonylbis[benzenamine] and 2,2'-[(3,3',5,5'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis(oxymethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 105391-33-1

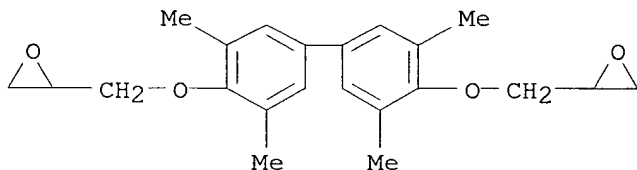
CMF C27 H26 N2 O4



CM 2

CRN 85954-11-6

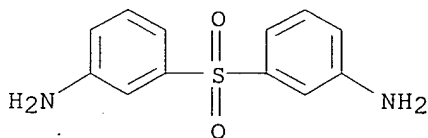
CMF C22 H26 O4



CM 3

CRN 599-61-1

CMF C12 H12 N2 O2 S

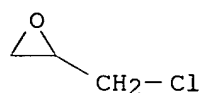


CM 4

CRN 106-89-8

CMF C3 H5 Cl O

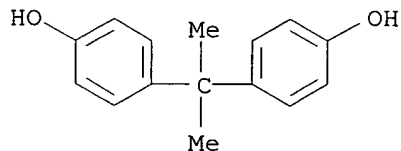




CM 5

CRN 80-05-7

CMF C15 H16 O2



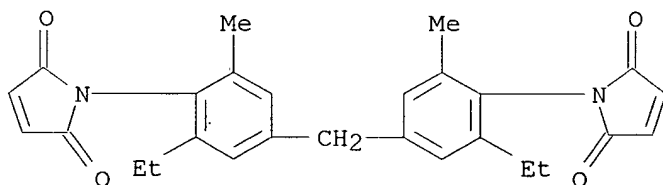
RN 153411-55-3 HCA

CN 1H-Pyrrole-2,5-dione, 1,1'-[methylenebis(2-ethyl-6-methyl-4,1-phenylene)]bis-, polymer with (chloromethyl)oxirane, 4,4'-methylenebis[benzenamine], 4,4'-(1-methylethylidene)bis[phenol] and 2,2'-[(3,3',5,5'-tetramethyl[1,1'-biphenyl]-4,4'-diyl)bis(oxyethylene)]bis[oxirane] (9CI) (CA INDEX NAME)

CM 1

CRN 105391-33-1

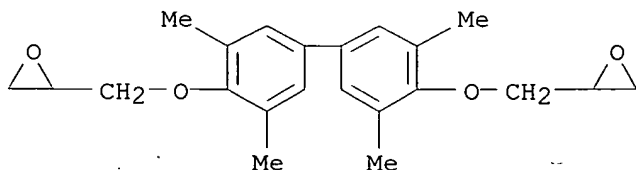
CMF C27 H26 N2 O4



CM 2

CRN 85954-11-6

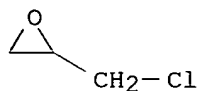
CMF C22 H26 O4



CM 3

CRN 106-89-8

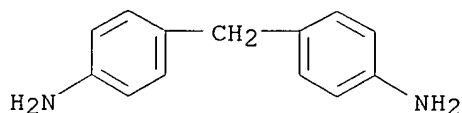
CMF C3 H5 Cl O



CM 4

CRN 101-77-9

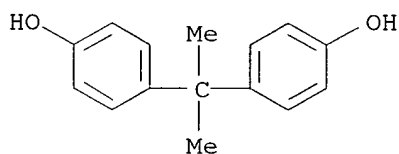
CMF C13 H14 N2



CM 5

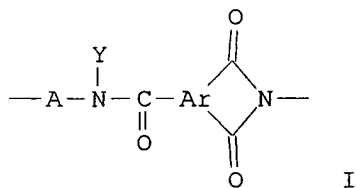
CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 14 OF 52 HCA COPYRIGHT 2004 ACS on STN  
 120:32546 Heat-resistant adhesives. Inoe, Hiroshi; Takabayashi, Seiichiro;  
 Funakoshi, Tsutomu; Sonoyama, Kenji (Ube Industries, Japan). Jpn. Kokai  
 Tokkyo Koho JP 05179220 A2 **19930720** Heisei, 7 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 1991-361291 19911226.

GI



AB The title adhesives, used in bonding metal foils with heat-resistant films  
 for manufacture of flexible printed circuit boards, contain (A) 100 parts  
 soluble  
 aromatic poly(amide-imides) containing  $\geq 80\%$  repeating units I (A =  
 bivalent residue of diamine compound except 2 NH<sub>2</sub>; Ar = 3-valent aromatic group  
 residue of aromatic tricarboxylic acid except 3 CO<sub>2</sub>H; Y = H, Me) obtained by  
 treating trimellitic acid-based aromatic tricarboxylic acids and

diaminopolysiloxane-based diamines, (B) 25-300 parts epoxy resins, and (C) epoxy hardeners. Thus, trimellitic acid anhydride 0.2,  $\text{H}_2\text{N}(\text{CH}_2)_3(\text{SiMe}_2\text{O})_9\text{SiMe}_2(\text{CH}_2)_3\text{NH}_2$  0.12, and 2,2-bis[4-(4-aminophenoxy)phenyl]propane 0.08 mol were treated at  $270^\circ$  for 2 h in sulfolane to obtain a poly(amide-imide), 50 parts of which was blended with Epikote 807 20, Tetrad X 10, H 1 (phenol novolak hardener) 20, and THF 200 parts to obtain an adhesive. An Upilex S film was coated with the adhesive, dried, laminated with a **Cu foil**, and treated at  $80\text{--}160^\circ$  for 16 h to give a test piece showing adhesion strength 1.6 kg/mm<sup>2</sup> at  $25^\circ$  and 0.6 at  $180^\circ$ .

IC ICM C09J163-00

ICS C09J179-08

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 56, 76

IT **Epoxy resins, uses**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, containing polyamide-polyimide-siloxanes, with good heat resistance, for printed circuit boards)

IT **Adhesives**

(heat-resistant, containing polyamide-polyimide-siloxanes and epoxy resins, for printed circuit boards)

IT **Electric circuits**

(printed, boards, adhesives for, containing polyamide-polyimide-siloxanes and epoxy resins, with good heat resistance)

IT 7440-50-8, **Copper**, uses

RL: USES (Uses)

(**foils**, adhesives for, containing polyamide-polyimide-siloxanes and epoxy resins, with good heat resistance, for printed circuit boards)

IT **151866-03-4P** 151958-37-1P 152158-77-5P

RL: PREP (Preparation)

(preparation of, adhesives, containing polyamide-polyimide-siloxanes, with good heat resistance, for printed circuit boards)

IT **151866-03-4P**

RL: PREP (Preparation)

(preparation of, adhesives, containing polyamide-polyimide-siloxanes, with good heat resistance, for printed circuit boards)

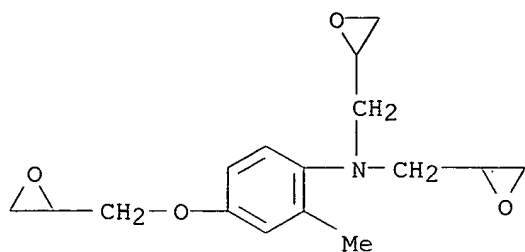
RN 151866-03-4 HCA

CN Formaldehyde, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol], N-[2-methyl-4-(oxiranylmethoxy)phenyl]-N-(oxiranylmethyl)oxiranemethanamine and phenol (9CI) (CA INDEX NAME)

CM 1

CRN 110656-67-2

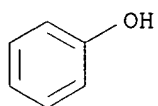
CMF C16 H21 N O4



CM 2

CRN 108-95-2

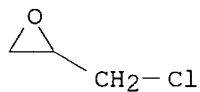
CMF C6 H6 O



CM 3

CRN 106-89-8

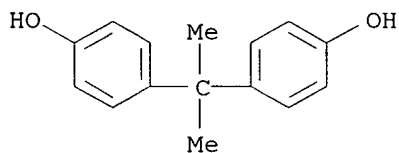
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

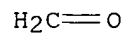
CMF C15 H16 O2



CM 5

CRN 50-00-0

CMF C H2 O



L43 ANSWER 15 OF 52 HCA COPYRIGHT 2004 ACS on STN  
118:256279 Heat-resistant polyamide-epoxy resin blend adhesives for printed circuit board manufacture. Nojiri, Hitoshi; Yabuta, Katsunori (Kanegafuchi Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04304282 A2 19921027 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-92932 19910329.

AB The title adhesives comprise polyamides (e.g., alc.-soluble nylons), epoxy resins (A), and reaction products of polyamide or polyamide amine curing agents and A or epoxy resins having mol. structure different from A. **Cu foil** coated with a mixture of 20 g liquid containing reaction product of Epikote 828 and Tolimide 29.6 (polyamide amino), and 80 g liquid containing Epikote 1001, Macromelt 6900 (nylon), and dicyandiamide showed uniform and high adhesive strength.

IC ICM C09J163-00  
ICS C09J177-00

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76

IT **Epoxy resins, uses**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing polyamides, heat-resistant, for printed circuit boards)

IT **Adhesives**  
(heat-resistant, epoxy resin-polyamide blends, for printed circuit boards)

IT **Electric circuits**  
(printed, boards, adhesives for, epoxy resin-polyamide blends as, heat-resistant)

IT **148053-22-9**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing polyamides, heat-resistant, for printed circuit boards)

IT **148053-22-9**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing polyamides, heat-resistant, for printed circuit boards)

RN 148053-22-9 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and Tohmide 296 (9CI) (CA INDEX NAME)

CM 1

CRN 118550-49-5

CMF Unspecified

CCI MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 461-58-5

CMF C2 H4 N4

NH

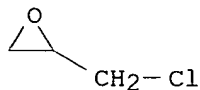
||

H<sub>2</sub>N-C-NH-CN

CM 3

CRN 106-89-8

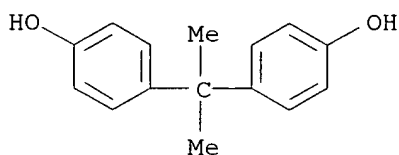
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 16 OF 52 HCA COPYRIGHT 2004 ACS on STN

118:104248 Epoxy resin-carboxylated nitrile rubber blend adhesives for flexible printed circuit boards. Arai, Hitoshi; Eikuchi, Kichiji (Shin-Etsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04199694 A2 **19920720** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-331764 19901129.

AB The title adhesives, for elec. insulating film-metal laminates, comprise (A) CO<sub>2</sub>H-containing nitrile rubber 100, (B) epoxy resins containing 2 epoxy groups/mol. 20-280, (C) epoxy resins containing ≥3 epoxy groups/mol. 20-280, (D) hardeners 5-10, (E) curing accelerators selected from imidazoles, tert-amine Ph<sub>4</sub>BO<sub>3</sub> salt, borofluorides or octanoates of Zn, Ni, or Sn 0.1-10, and (F) fire retardants 0-50 parts with halogen content >10% (based on A + B + C + D + E), (B + C)/A 0.7-4.0, and C/(B + C) 0.3-0.7. Thus, a composition containing Nipol 1072 100, Epikote 5050 80, Epikote 154 80, 4,4'-diaminodiphenylsulfone 30, Sn borofluoride 1.0, and ATOX S 15 parts was used to bind a **Cu foil** and a Kapton 100H film and gave a laminate with good initial adhesion, heat (at 150°), and fire, solvent, and soldering heat resistance.

IC ICM H05K003-38

ICS C09J113-00; C09J163-00; H01B005-14

ICA C08L063-00

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Adhesives**

(carboxy-containing nitrile rubber and epoxy resin blends, for metal-elec. insulating plastic laminates for printed circuit boards)

IT **Epoxy resins, uses**

RL: USES (Uses)

(halogen-containing, carboxy-containing nitrile rubber blends, as adhesives for metal and elec. insulating plastic laminates, for elec. circuit boards)

IT **Electric circuits**

(printed, laminated bases of, adhesives for, epoxy resin and carbonyl-containing nitrile rubber blends as)

IT 146247-99-6 146248-00-2 146248-01-3

RL: USES (Uses)

(carboxy-containing nitrile rubber blends, as adhesives for metal and elec. insulating plastic laminates, for elec. circuit boards)

IT 7440-50-8, **Copper**, miscellaneous

RL: MSC (Miscellaneous)

(plastic laminates, adhesive compns. for, for elec. circuit boards)

IT 146248-00-2 146248-01-3

RL: USES (Uses)

(carboxy-containing nitrile rubber blends, as adhesives for metal and elec. insulating plastic laminates, for elec. circuit boards)

RN 146248-00-2 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with BREN-S, (chloromethyl)oxirane and 4,4'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 93195-67-6

CMF Unspecified

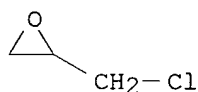
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 106-89-8

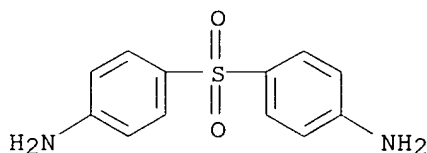
CMF C3 H5 Cl O



CM 3

CRN 80-08-0

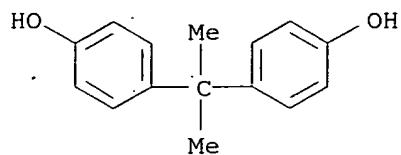
CMF C12 H12 N2 O2 S



CM 4

CRN 80-05-7

CMF C15 H16 O2



RN 146248-01-3 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, Epikote 154, 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxymethylene]]bis[oxirane] and 4,4'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 63939-13-9

CMF Unspecified

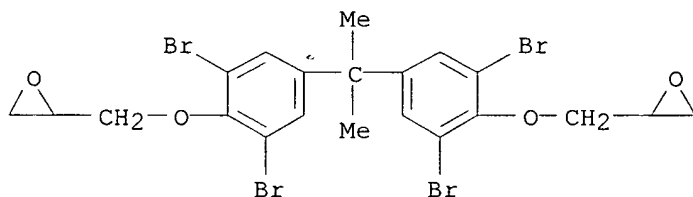
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 3072-84-2

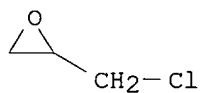
CMF C21 H20 Br4 O4



CM 3

CRN 106-89-8

CMF C3 H5 Cl O

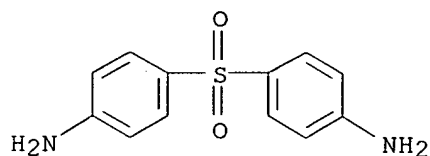


CM 4

CRN 80-08-0

CMF C12 H12 N2 O2 S

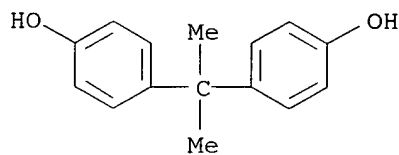




CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 17 OF 52 HCA COPYRIGHT 2004 ACS on STN

117:113086 Poly(vinyl butyral) adhesives, adhesive-coated **copper****foils**, and **copper**-clad laminates. Suzuki, Tetsuaki

(Toshiba Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 04039373 A2

**19920210** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION:

JP 1990-146533 19900605.

AB **Cu**-clad laminates with excellent tracking resistance, peel strength, and solder heat resistance are manufactured using **Cu foils** coated with adhesives containing poly(vinyl butyrals), epoxy-melamine resins, and 5-30% (based on solids) furan resins. Thus, a **Cu foil** was coated with a 20%-solids adhesive containing BX 1 [poly(vinyl butyral)] 100, ST 3000 (hydrogenated bisphenol A epoxy resin) 50, Cymel 350 25, and Hitafuran 302 25 parts, dried, and hot pressed with processed paper to give a 1.6-mm **Cu**-clad laminate with solder heat resistance 35-40 s, peel strength 2.20 kg/cm at room temperature and 1.00 kg/cm at 150°, and good tracking resistance.

IC ICM C09J129-14

ICS C09J161-28; C09J163-00; C09J171-14; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST **copper** laminate adhesive polyvinyl butyral; epoxy resin adhesive laminate; furan resin adhesive laminate; printed circuit board adhesive; heat resistance adhesive printed circuit

IT **Epoxy resins, uses**

RL: USES (Uses)

(melamine-, adhesives containing, heat-resistant, for **copper**-clad laminates)

IT Heat-resistant materials

(adhesives, blends of poly(vinyl butyrals) and epoxy-melamine resins and furan resins as, for **copper**-clad laminates)

IT Vinyl acetal polymers

RL: USES (Uses)

(butyrals, adhesives containing, BX 1, heat-resistant, for **copper**-clad laminates)IT **Adhesives**

(heat-resistant, blends of poly(vinyl butyrals) and epoxy-melamine resins and furan resins as, for **copper**-clad laminates)

IT **Electric circuits**

(printed, boards, **copper**-clad laminates, adhesives for)

IT 25212-86-6, Hitafuran 302 **143114-15-2**

RL: USES (Uses)

(adhesives containing, heat-resistant, for **copper**-clad laminates)

IT 7440-50-8, **Copper**, uses

RL: USES (Uses)

(**foils**, adhesives for, poly(vinyl butyrals) and epoxy resin and furan resins as, in laminates)

IT **143114-15-2**

RL: USES (Uses)

(adhesives containing, heat-resistant, for **copper**-clad laminates)

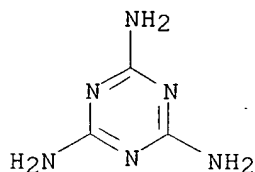
RN 143114-15-2 HCA

CN Formaldehyde, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[cyclohexanol] and 1,3,5-triazine-2,4,6-triamine (9CI)  
(CA INDEX NAME)

CM 1

CRN 108-78-1

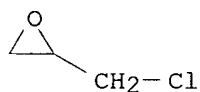
CMF C3 H6 N6



CM 2

CRN 106-89-8

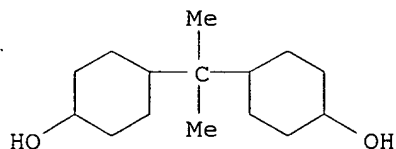
CMF C3 H5 Cl O



CM 3

CRN 80-04-6

CMF C15 H28 O2



CM 4

CRN 50-00-0  
CMF C H2 O

H<sub>2</sub>C=O

L43 ANSWER 18 OF 52 HCA COPYRIGHT 2004 ACS on STN  
116:215943 Epoxy-phenolic copolymer adhesive blend for **copper** and  
divalent side chain-containing epoxy laminate. Takaishi, Minoru; Yoshida,  
Masaharu (Showa Denko K. K., Japan). Jpn. Kokai Tokkyo Koho JP 03264349  
A2 **19911125** Heisei, 8 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1990-65213 19900315.  
AB Title blend comprises epoxy resin containing 10-300 phr poly(vinyl butyral)  
and 5-100 phr phenolic resin. A **Cu foil** was coated  
with epikote 1001 containing 6000 C 50, BLS 364 H (phenolic resin) 25,  
dicyandiamide 5, and 2-phenylimidazole 1 phr and laminated with melamine  
resin-treated kraft paper impregnated with Epikote 827  
methacrylate-styrene copolymer vanish, giving peel strength 2.3 kg/cm.  
IC ICM B32B015-08  
ICS H05K003-38  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76  
ST epoxy adhesive **copper** laminate; phenolic resin adhesive  
**copper**; polyvinyl butyral adhesive **copper**; elec circuit  
board adhesive; circuit board adhesive **copper**  
IT **Epoxy resins, uses**  
Phenolic resins, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for **copper foil** on circuit boards)  
IT **Adhesives**  
(epoxy-phenolic resin, for **copper foil** on circuit  
boards)  
IT Vinyl acetal polymers  
RL: TEM (Technical or engineered material use); USES (Uses)  
(butyrals, adhesives, for **copper foil** on circuit  
boards)  
IT **Electric circuits**  
(printed, boards, adhesives for **copper foil** on)  
IT 117441-79-9 **141287-92-5 141287-93-6**  
**141287-94-7**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for **copper foil** on circuit boards)  
IT **141287-92-5 141287-93-6 141287-94-7**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for **copper foil** on circuit boards)  
RN 141287-92-5 HCA  
CN Guanidine, cyano-, polymer with (chloromethyl)oxirane,  
4,4'-(1-methylethylidene)bis[phenol] and Shonol BLS 364H (9CI) (CA INDEX  
NAME)

CM 1

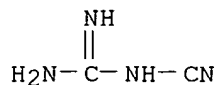
CRN 136109-68-7  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 461-58-5

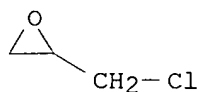
CMF C2 H4 N4



CM 3

CRN 106-89-8

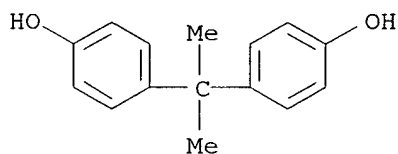
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



RN 141287-93-6 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, Epikote 152, 4,4'-(1-methylethylidene)bis[phenol] and Shonol BLS 364H (9CI) (CA INDEX NAME)

CM 1

CRN 136109-68-7

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 84778-06-3

CMF Unspecified

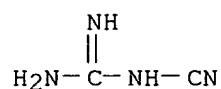
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 461-58-5

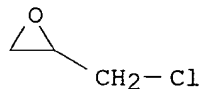
CMF C2 H4 N4



CM 4

CRN 106-89-8

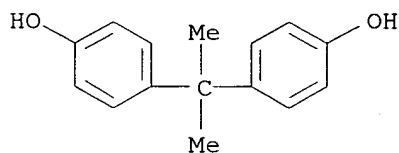
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



RN 141287-94-7 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane,  
Epikote 152 and Shonol BLS 364H (9CI) (CA INDEX NAME)

CM 1

CRN 136109-68-7

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 84778-06-3

CMF Unspecified

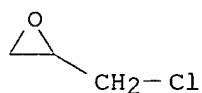
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 106-89-8

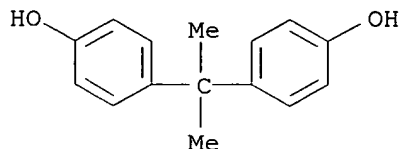
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 19 OF 52 HCA COPYRIGHT 2004 ACS on STN

116:215932 Adhesives containing crosslinkable mixtures of acrylic rubber and phenolic and epoxy resins for manufacture of flexible printed circuit boards. Takahashi, Hiroshi; Suzuki, Masakatsu; Sugano, Masao; Iwasaki, Yorio; Okamura, Toshiro (Hitachi Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03255186 A2 **19911114** Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-53048 19900305.

AB Crosslinkable mixts., useful as adhesives for manufacture of the title boards, contain epoxy resins, carboxy-, hydroxy-, and/or epoxy-containing acrylic rubbers, and phenol- and/or amine-modified alkylphenol-aldehyde copolymers. A composition was prepared from 83:37 Teisan HTR 700 (an acrylic elastomer)-Teisan WS 032B (an acrylic elastomer) mixture containing resorcinol-modified 0.5:0.5:2 (mol ratio) p-tert-butylphenol-p-phenylphenol-formaldehyde copolymer 39, BREN-S 65, 1.5:13.5 Curezol 2E4MZ (catalyst)-DMF mixture 15, Al(OH)<sub>3</sub> 45, and a solvent 860 phr. An elec. circuit board, prepared from this composition, Kapton **film**, and **Cu foil**, showed peel strength 0.7 kg/cm at 105° and solder resistance >60 s.

IC ICM C09J163-00

ICS C08G059-40; C08G059-62; H05K003-28; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 39, 76

IT **Adhesives**

(functional group-containing acrylic rubber, containing phenolic and epoxy resin vulcanizing agents, for manufacture of flexible elec. circuit boards)

IT **Epoxy resins, uses**

RL: USES (Uses)

(phenolic, vulcanizing agents, for functional group-containing acrylic rubber adhesives, for manufacture of printed circuit boards)

IT **Electric circuits**

(printed, boards, adhesives for manufacture of, acrylic rubber-phenol resin-epoxy resin-based)

IT 25036-53-7, Kapton

RL: USES (Uses)

(adhesives for bonding of **films** of, to **copper foils**, acrylic rubber-epoxy resin-phenolic resin-based, for manufacture of elec. circuit boards)

IT 7440-50-8, **Copper**, miscellaneous

RL: MSC (Miscellaneous)

(adhesives for bonding of foils of, to polyimide films, acrylic rubber-epoxy resin-phenolic resin-based, for manufacture of elec. circuit boards)

IT 141227-73-8P **141227-74-9P** 141227-75-0P 141227-76-1P

RL: PREP (Preparation)

(manufacture of as vulcanizing agents, for functional group-containing acrylic

rubber adhesives, for manufacture of flexible elec. circuit boards)

IT 141227-74-9P

RL: PREP (Preparation)

(manufacture of as vulcanizing agents, for functional group-containing acrylic

rubber adhesives, for manufacture of flexible elec. circuit boards)

RN 141227-74-9 HCA

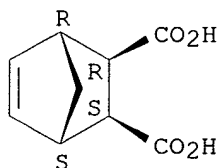
CN Bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid, (exo,exo)-, polymer with 1,3-benzenediol, [1,1'-biphenyl]-4-ol, (chloromethyl)oxirane, 4-(1,1-dimethylpropyl)phenol, formaldehyde and 4,4'-(1-methylethylidene)bis[2,6-dibromophenol] (9CI) (CA INDEX NAME)

CM 1

CRN 21196-51-0

CMF C9 H10 O4

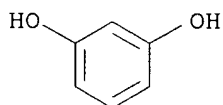
Relative stereochemistry.



CM 2

CRN 108-46-3

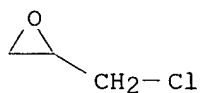
CMF C6 H6 O2



CM 3

CRN 106-89-8

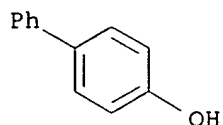
CMF C3 H5 Cl O



CM 4

CRN 92-69-3

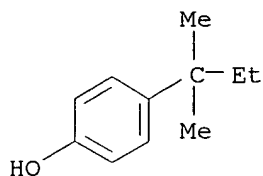
CMF C12 H10 O



CM 5

CRN 80-46-6

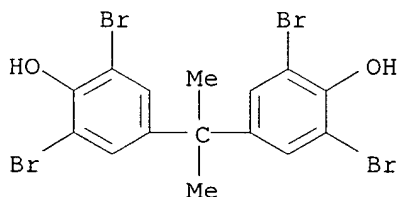
CMF C11 H16 O



CM 6

CRN 79-94-7

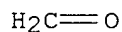
CMF C15 H12 Br4 O2



CM 7

CRN 50-00-0

CMF C H2 O



L43 ANSWER 20 OF 52 HCA COPYRIGHT 2004 ACS on STN

116:175760 Adhesives for **copper**-clad laminates. Yasuzawa, Kohei; Yamamoto, Kazunori; Ogi, Shinji; Nanaumi, Ken (Hitachi Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03296587 A2 **19911227** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-101271 19900417.

AB The title adhesives with good storage stability and **Cu foil** adhesion comprise (A) thermoplastic resins and/or rubbers, (B) epoxy resins having  $\geq 2$  epoxy groups, and (C) compds. containing  $\geq 2$   $\alpha, \beta$ -unsatd. double bonds. Thus, a **copper foil** coated with an adhesive containing Denka Butyral 5000A 30, Epikote 1001 40, novolak 10, 2E4MZ 0.1, and EPM 800 30 parts was laminated with 8 epoxy resin-paper prepregs then hot pressed at  $160^\circ$  and 100 kg/cm<sup>2</sup> for 60 min to give a laminate with **Cu foil** peel



strength 2.0 kg/cm. Pot life of the adhesive was  $\geq 2$  mo, vs. 1 for a control without EPM 800.

IC ICM C09J163-00  
ICS C09J129-04; C09J133-04; C09J133-18

ICA C08G059-40; C08L063-00

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76

ST thermoplastic resin adhesive **copper** laminate; rubber adhesive **copper** clad laminate; epoxy resin adhesive **copper** laminate

IT Rubber, nitrile, uses  
RL: USES (Uses)  
(adhesives containing, Nipol 1041, storage-stable, for **copper** -clad laminates)

IT **Adhesives**  
(thermoplastic or rubber blends, storage-stable, for **copper** -clad laminates)

IT **Epoxy resins, uses**  
RL: USES (Uses)  
(thermoplastic resin or rubber blends, adhesives, storage-stable, for **copper**-clad laminates)

IT Vinyl acetal polymers  
RL: USES (Uses)  
(butyral, adhesives containing, Denka Butyral 5000A, storage-stable, for **copper**-clad laminates)

IT **Electric circuits**  
(printed, boards, **copper**-clad laminates, adhesives for, thermoplastic resin or rubber blends as)

IT 7440-50-8, **Copper**, uses  
RL: USES (Uses)  
(**foils**, laminates, adhesives for, thermoplastic resin or rubber blends as)

IT 9003-18-3  
RL: USES (Uses)  
(rubber, adhesives containing, Nipol 1041, storage-stable, for **copper**-clad laminates)

IT 25068-38-6, Epikote 1001 **40989-34-2**  
RL: USES (Uses)  
(thermoplastic resin or rubber blends, adhesives, storage-stable, for **copper**-clad laminates)

IT 97-90-5, NK Ester 1G 109223-94-1, NK Ester EPM 800  
RL: USES (Uses)  
(thermoplastic resin or rubber containing, adhesives, storage-stable, for **copper**-clad laminates)

IT **40989-34-2**  
RL: USES (Uses)  
(thermoplastic resin or rubber blends, adhesives, storage-stable, for **copper**-clad laminates)

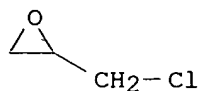
RN 40989-34-2 HCA

CN 1,3-Isobenzofurandione, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 106-89-8

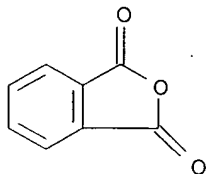
CMF C3 H5 Cl O



CM 2

CRN 85-44-9

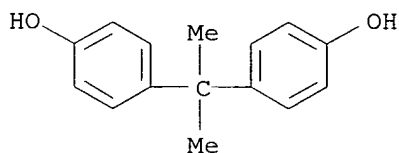
CMF C8 H4 O3



CM 3

CRN 80-05-7

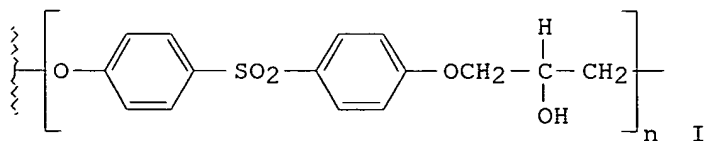
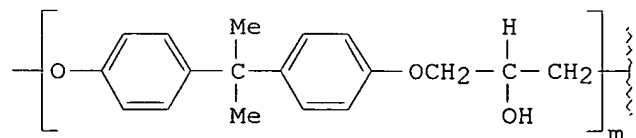
CMF C15 H16 O2



L43 ANSWER 21 OF 52 HCA COPYRIGHT 2004 ACS on STN

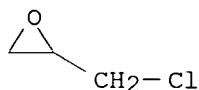
115:281559 Adhesives for **copper foils**. Fujiwara, Kazuhisa; Kuwako, Fujio; Kanao, Yoshinori (Mitsui Mining and Smelting Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03050283 A2 **19910304** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-184985 19890718.

GI

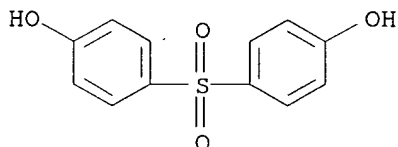


- AB Heat- and solvent-resistant title adhesives, useful for manufacture of printed circuit boards, comprise 20-80% thermosetting resins from epoxy resins, phenolic resins, melamine resins, xylene resins, polyesters, polyimides, and amineimide resins and 20-80% I containing 10-80% bisphenol A unit and 20-90% bisphenol S unit with weight-average mol. weight  $\geq 10,000$ . Thus, a **Cu foil** coated with an adhesive composition of Pheno Tohto YPS-007 (polyhydroxypolyetherpolysulfone) 50, Epo Tohto YD 128 50, and Amicure PN 23 5 parts was pressed to a chromate-treated Al board at 170° and 100 kg/cm<sup>2</sup> to form a laminate, which showed peel strength 2.0 kg/cm at room temperature, solder heat resistance (260°) >600 s, and no change when immersed in trichloroethylene at room temperature for 1 h vs. 2.0, 120, and solution, resp., for a control containing 60 parts Denka Butyral 4000-2 and 40 parts Plyophen 5010.
- IC ICM C09J171-10  
ICS C09J161-06; C09J161-28; C09J163-00
- ICA C08L071-10
- CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 37
- ST adhesive polyhydroxypolyetherpolysulfone thermoset **copper foil**; heat resistance polyhydroxypolyetherpolysulfone thermoset adhesive; solvent resistance polyhydroxypolyetherpolysulfone thermoset adhesive; printed circuit board polyhydroxypolyetherpolysulfone adhesive
- IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(blends with polyhydroxypolyetherpolysulfones, adhesives, heat- and solvent-resistant, for bonding **copper foils**)
- IT Chemically resistant materials  
(adhesives, solvent-resistant, blends of polyhydroxypolyetherpolysulfones with thermosetting resins, for bonding **copper foils**)
- IT Heat-resistant materials  
(adhesives, solvent-resistant, blends of polyhydroxypolyetherpolysulfones with thermosetting resins, for bonding **copper foils**)
- IT **Adhesives**  
(chemical resistant, solvent-resistant, blends of polyhydroxypolyetherpolysulfones with thermosetting resins, for bonding **copper foils**)
- IT **Adhesives**  
(heat- and solvent-resistant, blends of polyhydroxypolyetherpolysulfones with thermosetting resins, for bonding **copper foils**)
- IT Polysulfones, uses and miscellaneous  
RL: USES (Uses)  
(polyether-, hydroxy-containing, blends with epoxy resins, adhesives, heat- and solvent-resistant, for bonding **copper foils**)
- IT Polyethers, uses and miscellaneous  
RL: USES (Uses)  
(polysulfone-, hydroxy-containing, blends with epoxy resins, adhesives, heat- and solvent-resistant, for bonding **copper foils**)
- IT **Electric circuits**  
(printed, boards, **copper-clad** laminates, adhesives for manufacture of, heat- and solvent-resistant)
- IT 25068-38-6, Epo Tohto YD 128  
RL: USES (Uses)  
(blends with polyhydroxypolyetherpolysulfones, adhesives, heat- and

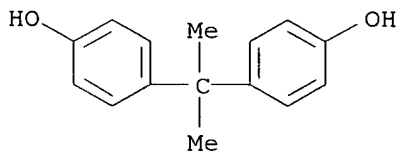
solvent-resistant, for bonding **copper foils**)  
IT 37702-97-9  
RL: USES (Uses)  
(blends with thermosetting resins, adhesives, heat- and  
solvent-resistant, for bonding **copper foils**)  
IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(foils, adhesives for, in manufacture of **copper**-clad laminates)  
IT 37702-97-9  
RL: USES (Uses)  
(blends with thermosetting resins, adhesives, heat- and  
solvent-resistant, for bonding **copper foils**)  
RN 37702-97-9 HCA  
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane  
and 4,4'-sulfonylbis[phenol] (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 106-89-8  
CMF C3 H5 Cl O



CM 2  
  
CRN 80-09-1  
CMF C12 H10 O4 S



CM 3  
  
CRN 80-05-7  
CMF C15 H16 O2



L43 ANSWER 22 OF 52 HCA COPYRIGHT 2004 ACS on STN  
115:281551 Adhesives for **copper foils** for printed circuit  
boards. Fujiwara, Kazuhisa; Kuwako, Fujio; Kanao, Yoshinori (Mitsui  
Mining and Smelting Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03037284  
A2 19910218 Heisei, 6 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1989-172489 19890704.

AB The title adhesives, with good solvent resistance, contain photopolymerizable and thermosetting resins and 0.1-10 phr organic initiators. An 80% MEK solution of Kayarad TMPTA 13, Kayarad RM 1001 (photopolymerizable oligomer) 50, Epikote-1001 25, Plyophen TD2131 (phenolic resin) 12, and Irgacure-184 2 parts was coated on 30-40  $\mu$ m Cu foil, irradiated with UV, dried at 100°, and pressed with phenolic resin-paper prepregs at 150° and 120 kg/cm<sup>2</sup> for 1 h to give a laminate with good resistance to solder and C<sub>2</sub>HCl<sub>3</sub> and peel adhesion 2.2 kg/cm.

IC ICM C09J004-00  
ICS C09J011-06; C09J187-00

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 56, 76

ST **copper** laminate adhesive photopolymn; circuit board  
**copper** adhesive; polymn photochem adhesive **copper**

IT **Epoxy resins, uses and miscellaneous**  
Phenolic resins, uses and miscellaneous  
Polyesters, uses and miscellaneous  
Polyimides, uses and miscellaneous  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, photocurable, for **copper** foils in circuit boards)

IT Lamination  
(of **copper** for circuit boards, photocurable adhesives for)

IT **Adhesives**  
(photocurable, for lamination of **copper** for circuit boards)

IT **Electric circuits**  
(printed, boards, **copper** lamination for, photocurable adhesives for)

IT **137049-96-8** 137049-97-9 137049-98-0 **137763-52-1**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, photocurable, for **copper** foils in circuit boards)

IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(laminates for circuit boards, photocurable adhesives for)

IT **137049-96-8** **137763-52-1**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, photocurable, for **copper** foils in circuit boards)

RN 137049-96-8 HCA

CN 2-Propenoic acid, 2-ethyl-2-[[ (1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with (chloromethyl)oxirane, 4-(1-oxo-2-propenyl)morpholine and Phenolite TD 2131 (9CI) (CA INDEX NAME)

CM 1

CRN 162629-03-0

CMF Unspecified

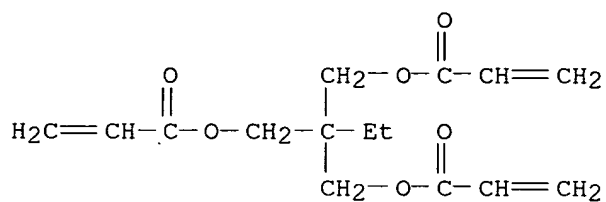
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 15625-89-5

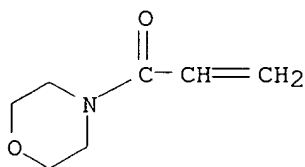
CMF C15 H20 O6



CM 3

CRN 5117-12-4

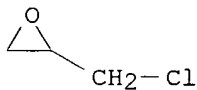
CMF C7 H11 N O2



CM 4

CRN 106-89-8

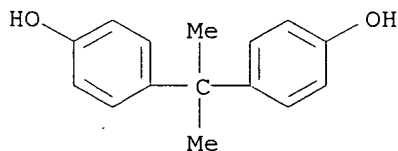
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



RN 137763-52-1 HCA

CRN 2-Propenoic acid, (2,2-dimethyl-1,3-propanediyl)bis[oxy(2,2-dimethyl-3-oxo-3,1-propanediyl)] ester, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol], 4-(1-oxo-2-propenyl)morpholine and Phenolite TD 2131 (9CI) (CA INDEX NAME)

CM 1

CRN 162629-03-0

CMF Unspecified

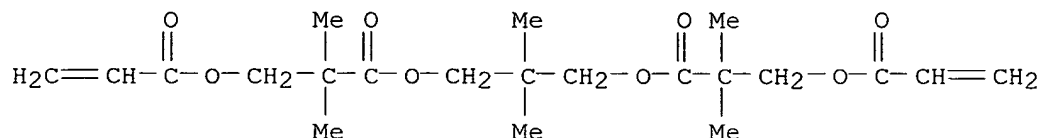
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 90780-31-7

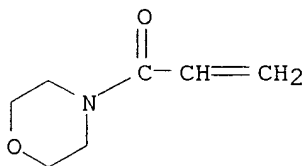
CMF C21 H32 O8



CM 3

CRN 5117-12-4

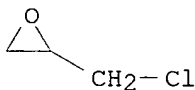
CMF C7 H11 N O2



CM 4

CRN 106-89-8

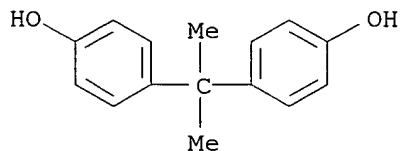
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 23 OF 52 HCA COPYRIGHT 2004 ACS on STN  
115:257845 Adhesives containing electron beam-curable resins and thermosetting  
resins for **copper foils**. Fujiwara, Kazuhisa; Kanao,  
Yoshinori (Mitsui Mining and Smelting Co., Ltd., Japan). Jpn. Kokai

Tokkyo Koho JP 03109472 A2 19910509 Heisei, 5 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1989-219861 19890825.

- AB The title resins for fabrication of printed circuit boards comprise 2:8-8:2 mixts. of electron beam-curable resins and thermosetting resins. Thus, a **Cu foil** was coated with a 90% solution containing Viscoat 540 35, Epoxy Ester 3002A 35, Epikote 828 10, and Sumilit PR 16382 (phenolic resin) 15 parts in MEK, dried, and hot pressed with phenolic resin-impregnated paper prepreg at 150° and 120 kg/cm<sup>2</sup> for 1 h to give a **Cu-clad laminate** showing peel strength 2.1 kg/cm, solder heat resistance 26 s, and no change after 1 h in Triclene, vs. 2.0, 12, and dissolving, resp., using an adhesive containing Maruzen Resin X and Denka Butyral 4000-2.
- IC ICM C09J004-02  
ICS C08F002-54; C09J161-06; C09J161-28; C09J163-00; C09J167-02;  
C09J179-08; C09J181-02
- CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76
- ST vinyl polymer adhesive **copper foil**; thermosetting resin adhesive **copper foil**; epoxy resin adhesive **copper foil**; printed circuit board adhesive
- IT **Adhesives**  
(blends of electron beam-curable resins and thermosetting resins, for **copper foils** in printed circuit boards)
- IT **Epoxy resins, uses and miscellaneous**  
Phenolic resins, uses and miscellaneous  
Polyesters, uses and miscellaneous  
Polyimides, uses and miscellaneous  
RL: USES (Uses)  
(electron beam-curable resin blends, adhesives, for **copper foils** in printed circuit boards)
- IT **Electric circuits**  
(printed, boards, **copper foils** in, adhesives for, blends of electron beam-curable resins and thermosetting resins as)
- IT 1330-20-7D, Xylene, polymers 9003-08-1, Formaldehyde-melamine copolymer 137459-18-8 **137459-19-9**  
RL: USES (Uses)  
(electron beam-curable resin blends, adhesives, for **copper foils** in printed circuit boards)
- IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(foils, adhesives for, blends of electron beam-curable resins and thermosetting resins as, for printed circuit boards)
- IT **85402-05-7 137293-08-4 137293-09-5**  
RL: USES (Uses)  
(thermosetting resin blends, adhesives, for **copper foils** in printed circuit boards)
- IT **137459-19-9**  
RL: USES (Uses)  
(electron beam-curable resin blends, adhesives, for **copper foils** in printed circuit boards)
- RN 137459-19-9 HCA
- CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and Sumilit PR 16382 (9CI) (CA INDEX NAME)
- CM 1
- CRN 136895-31-3  
CMF Unspecified



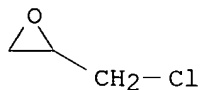
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 106-89-8

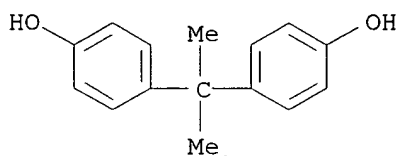
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



IT 85402-05-7 137293-08-4 137293-09-5

RL: USES (Uses)

(thermosetting resin blends, adhesives, for **copper foils** in printed circuit boards)

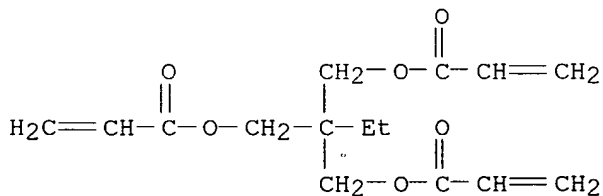
RN 85402-05-7 HCA

CN 2-Propenoic acid, 2-ethyl-2-[[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with (chloromethyl)oxirane polymer with 4,4'-(1-methylethylidene)bis[phenol] di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 15625-89-5

CMF C15 H20 O6



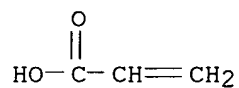
CM 2

CRN 53814-24-7

CMF (C15 H16 O2 . C3 H5 Cl O)x . 2 C3 H4 O2

CM 3

CRN 79-10-7  
CMF C3 H4 O2

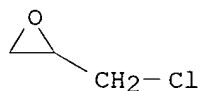


CM 4

CRN 25068-38-6  
CMF (C15 H16 O2 . C3 H5 Cl O)x  
CCI PMS

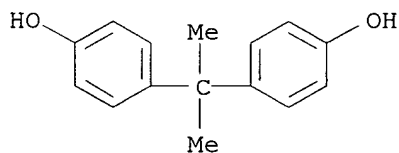
CM 5

CRN 106-89-8  
CMF C3 H5 Cl O



CM 6

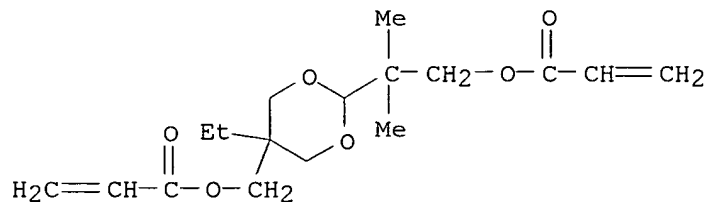
CRN 80-05-7  
CMF C15 H16 O2



RN 137293-08-4 HCA  
CN 2-Propenoic acid, [2-[1,1-dimethyl-2-[(1-oxo-2-propenyl)oxy]ethyl]-5-ethyl-1,3-dioxan-5-yl)methyl ester, polymer with (chloromethyl)oxirane polymer with 4,4'-(1-methylethylidene)bis[phenol] di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 87320-05-6  
CMF C17 H26 O6



CM 2

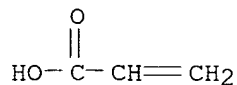
CRN 53814-24-7

CMF (C15 H16 O2 . C3 H5 Cl O)x . 2 C3 H4 O2

CM 3

CRN 79-10-7

CMF C3 H4 O2



CM 4

CRN 25068-38-6

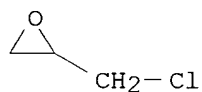
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 5

CRN 106-89-8

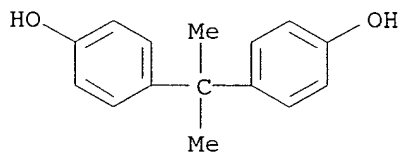
CMF C3 H5 Cl O



CM 6

CRN 80-05-7

CMF C15 H16 O2



RN 137293-09-5 HCA

CN 2-Propenoic acid, (1-methylethylidene)bis[4,1-phenyleneoxy(methyl-2,1-ethanediyl)oxy(2-hydroxy-3,1-propanediyl)] ester, polymer with (chloromethyl)oxirane polymer with 4,4'-(1-methylethylidene)bis[phenol] di-2-propenoate (9CI) (CA INDEX NAME)

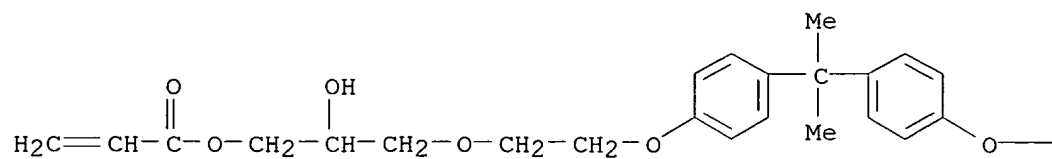
CM 1

CRN 105650-05-3

CMF C33 H44 O10

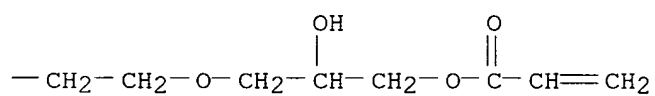
CCI IDS

PAGE 1-A



2 ( D1-Me )

PAGE 1-B



CM 2

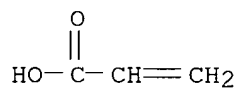
CRN 53814-24-7

CMF (C15 H16 O2 . C3 H5 Cl O)x . 2 C3 H4 O2

CM 3

CRN 79-10-7

CMF C3 H4 O2



CM 4

CRN 25068-38-6

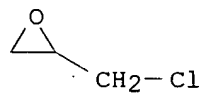
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 5

CRN 106-89-8

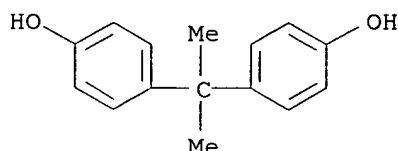
CMF C3 H5 Cl O



CM 6

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 24 OF 52 HCA COPYRIGHT 2004 ACS on STN

115:51423 Flame-retardant flexible printed circuit boards using phosphorus-containing polyester supports. Sakashita, Mario; Osawa, Ichiro; Shoji, Atsushi (Nikkan Industries Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03006085 A2 **19910111** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-141404 19890602.

AB The title boards comprises laminates of P-containing polyester films and metal foils prepared with adhesives containing polyesters 100, polyisocyanates 10-30, halogen-containing epoxy resins 10-40, halogen-containing fireproofing agents 40-100, and Sb2O3 10-40 parts. Thus, Lumirror Z 220 (I; P-containing polyester) film was coated with an adhesive comprising Nippollan 3022 100, Coronate L 20, Epikote 1045 30, bromoarene 70, and Sb2O3 25 parts, dried 5 min at 110°, laminated with **Cu foil**, and pressed 1 h at 160° to give a circuit board showing peel strength 1.3 kg/cm, good solder heat resistance, and UL-94 5A flame retardance VTM-0, vs. 1.2, good, and HB, resp., with Diafoil instead of I.

IC ICM H05K001-03

ICS H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses and miscellaneous**

Urethane polymers, uses and miscellaneous

RL: USES (Uses)

(adhesives containing, fire-retardant, for circuit boards)

IT **Adhesives**

(epoxy-urethane, for polyester film, in fire-retardant circuit board)

IT **Electric circuits**

(printed, boards, laminated, fire-retardant polyester substrate and adhesive for)

IT 134652-79-2 **134652-80-5**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, in fire-retardant laminates for circuit boards)

IT 7440-50-8, **Copper**, uses and miscellaneous

RL: USES (Uses)

(foil, laminate with polyester film, fire-retardant, for circuit board)

IT **134652-80-5**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, in fire-retardant laminates for circuit boards)

RN 134652-80-5 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, Coronate L and Nippollan 3022 (9CI) (CA INDEX NAME)

CM 1

CRN 62132-16-5

CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

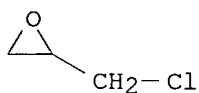
CM 2

CRN 39278-79-0  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

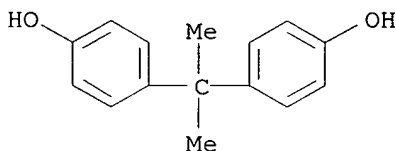
CM 3

CRN 106-89-8  
CMF C3 H5 Cl O



CM 4

CRN 80-05-7  
CMF C15 H16 O2



L43 ANSWER 25 OF 52 HCA COPYRIGHT 2004 ACS on STN

115:30546 Crosslinkable polymer compositions containing conjugated diene block polymers. Muramoto, Hiroo; Kimura, Kimiharu (Nippon Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02255855 A2 **19901016** Heisei, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-323318 19891213. PRIORITY: JP 1988-312842 19881213.

AB The title polymers, with good mech. strength and dielec. properties and useful for impregnation, lamination, and adhesion of electronic parts, etc., comprise thermoplastic polymers and/or vinyl monomers, and ether-linked block copolymers of conjugated dienes (A) and maleimides (B) having number-average mol. weight (.hivin.Mn) 500-100,000 and A:B weight ratio 20-90:80-10. Adding 270 g butadiene to 1530 g of a 0.13M solution of BuLi in THF over 4 h at -70°, then, after addnl. 1 h, adding 0.32 mol ethylene oxide prepared a living LiO-monoendcapped polymer, 90% of which was combined with 1600 g THF solution of 243 g N-phenylmaleimide (I) at -40° over 4 h to give a block copolymer with .hivin.Mn 4650, and I content 49.3%. An impregnation varnish was prepared from the block copolymer 100, YD-001 (an epoxy resin) 80, YD-128 (an epoxy resin) 20, 2-undecylimidazole 4, and dicumyl peroxide, 1 part giving cured prepreps. with permittivity 3.7, dielec. tan 0.008, and good adhesion to **Cu foil**, and good heat and moisture resistance.

IC ICM C08L053-00

ICA C08F293-00

CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 38

IT **Adhesives**  
Heat-resistant materials  
(butadiene-maleimide block polymer-crosslinked epoxy resins as)

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(polybutadiene-polymaleimide-, block, thermosetting, as varnishes for printed circuit board manufacture)

IT **Electric circuits**  
(printed, boards, varnishes for manufacture of, butadiene block or block graft copolymers and epoxy resin blends as)

IT 3290-92-4DP, polymers with butadiene-N-cyclohexylmaleimide-styrene block copolymer 97666-48-3DP, Epo Tohto YDCN 701, polymers with butadiene-cyclohexylmaleimide-styrene block polymers and methacrylate-terminated butadiene rubber 125690-15-5DP, polymers with epoxy resins and methacrylate-terminated butadiene rubber 134352-89-9P 134352-90-2P 134352-91-3P **134352-92-4P 134352-93-5P** 134352-94-6P **134352-95-7P** 134352-96-8P **134352-97-9P** 134689-72-8P **134689-74-0P** 134689-75-1P 134689-76-2P  
RL: PREP (Preparation)  
(preparation of, for prepregs for printed circuit boards, heat-resistant)

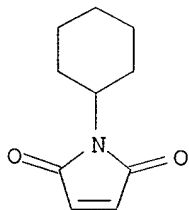
IT **134352-92-4P 134352-93-5P 134352-95-7P**  
**134352-97-9P 134689-74-0P**  
RL: PREP (Preparation)  
(preparation of, for prepregs for printed circuit boards, heat-resistant)

RN 134352-92-4 HCA

CN 1H-Pyrrole-2,5-dione, 1-cyclohexyl-, polymer with 1,3-butadiene, (chloromethyl)oxirane, ethenylbenzene and 4,4'-(1-methylethylidene)bis[phenol], block (9CI) (CA INDEX NAME)

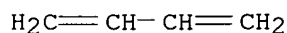
CM 1

CRN 1631-25-0  
CMF C10 H13 N O2



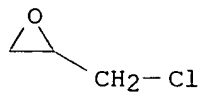
CM 2

CRN 106-99-0  
CMF C4 H6



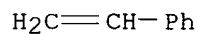
CM 3

CRN 106-89-8  
CMF C3 H5 Cl O



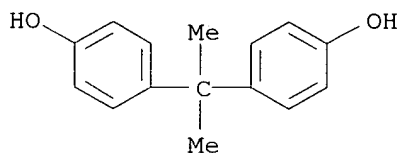
CM 4

CRN 100-42-5  
CMF C8 H8



CM 5

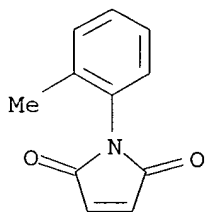
CRN 80-05-7  
CMF C15 H16 O2



RN 134352-93-5 HCA  
CN 1H-Pyrrole-2,5-dione, 1-(2-methylphenyl)-, polymer with 1,3-butadiene,  
(chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol], block  
(9CI) (CA INDEX NAME)

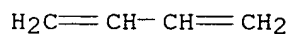
CM 1

CRN 4067-01-0  
CMF C11 H9 N O2



CM 2

CRN 106-99-0  
CMF C4 H6

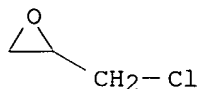




CM 3

CRN 106-89-8

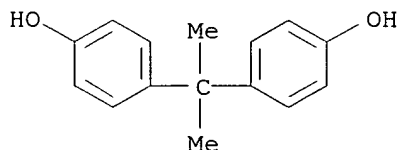
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



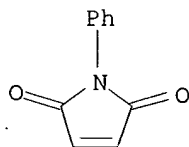
RN 134352-95-7 HCA

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 1,3-butadiene,  
(chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol], block,  
graft (9CI) (CA INDEX NAME)

CM 1

CRN 941-69-5

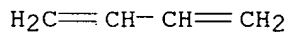
CMF C10 H7 N O2



CM 2

CRN 106-99-0

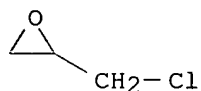
CMF C4 H6



CM 3

CRN 106-89-8

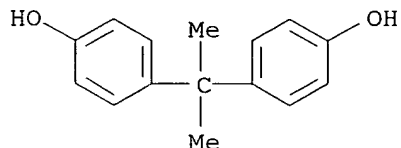
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



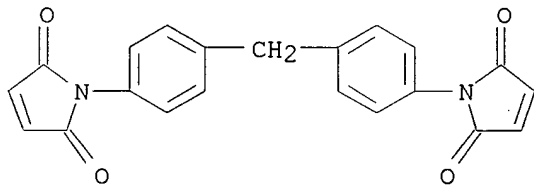
RN 134352-97-9 HCA

CN 1H-Pyrrole-2,5-dione, 1,1'-(methylenedi-4,1-phenylene)bis-, polymer with 1,3-butadiene, (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol], 1-(2-methylphenyl)-1H-pyrrole-2,5-dione and 1-phenyl-1H-pyrrole-2,5-dione, block, graft (9CI) (CA INDEX NAME)

CM 1

CRN 13676-54-5

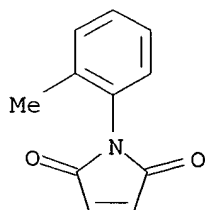
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CM 2

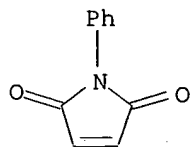
CRN 4067-01-0

CMF C11 H9 N O2



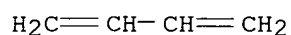
CM 3

CRN 941-69-5  
CMF C10 H7 N O2



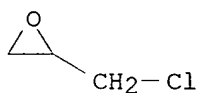
CM 4

CRN 106-99-0  
CMF C4 H6



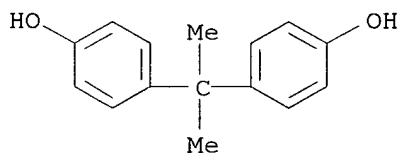
CM 5

CRN 106-89-8  
CMF C3 H5 Cl O



CM 6

CRN 80-05-7  
CMF C15 H16 O2



RN 134689-74-0 HCA  
CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 1,3-butadiene,  
(chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and YD 001,  
block (9CI) (CA INDEX NAME)

CM 1

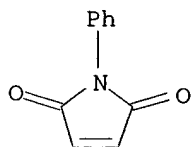
CRN 134377-36-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

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CRN 941-69-5

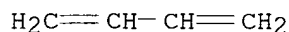
CMF C10 H7 N O2



CM 3

CRN 106-99-0

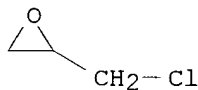
CMF C4 H6



CM 4

CRN 106-89-8

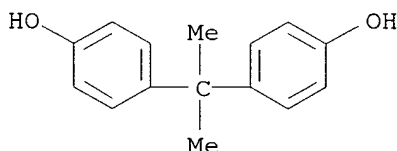
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 26 OF 52 HCA COPYRIGHT 2004 ACS on STN

113:133735 Heat-resistant butyral resin-epoxy resin adhesives for metal foils. Sakamoto, Toshio; Yao, Hajime (Matsushita Electric Works, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02060982 A2 **19900301** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-212985 19880826.

AB The title adhesives, having good room-temperature adhesion and useful for bonding metals to plastic laminates, comprise butyral resins, solid and liquid epichlorohydrin-bisphenol A epoxy resins, and oligomeric phenol novolaks. **Cu foil** was coated with an adhesive containing 6000C (butyral resin) 40, Epikote 1001 (solid) 70, Epikote 828 (liquid) 30, Resin XH (novolak) 40, dicyandiamide 1.0, and 2E4MZ 0.2 part, dried at 150°, and pressed against a phenolic resin prepreg at 150-170° and 50-120 kg/cm<sup>2</sup> to give a laminate with solder heat resistance 35-45 s and peel strength 2.05-2.15, 2.05-2.15, and 0.95-1.10 kg/cm initially, after solder treatment, and after heating at 150°.

resp., vs. 25-30, 2.00-2.10, 1.95-2.00, and 0.35-0.40, resp., without Epikote 828.

IC ICM C09J163-00  
ICS C09J129-14; C09J163-00

ICA C08G059-32; C08G059-62

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 55, 56, 76

ST metal adhesive epoxy heat resistance; butyral polyvinyl epoxy adhesive; phenolic hardener epoxy adhesive; adhesive epoxy **copper foil**; laminate prepreg **copper** adhesive; solder resistance adhesive epoxy; vinyl acetal resin adhesive

IT Crosslinking agents  
(novolaks, for epoxy resins, in adhesive for **copper foil**)

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(bisphenol A-based, liquid and solid, adhesives containing, for **copper foil**)

IT Vinyl acetal polymers  
RL: USES (Uses)  
(butyrals, adhesives containing, 6000C, for **copper foil** and prepregs)

IT **Adhesives**  
(heat-resistant, epoxy resin-poly(vinyl butyral)-novolak, for **copper foil** on prepregs)

IT Phenolic resins, uses and miscellaneous  
RL: USES (Uses)  
(novolak, hardeners, epoxy adhesives containing, for **copper foil**)

IT **Electric circuits**  
(printed, boards, adhesives for **copper foil** on, epoxy resin-containing)

IT **129401-28-1**  
RL: USES (Uses)  
(adhesives containing, for **copper foil** and phenoplast prepregs)

IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(foil, adhesives for phenoplast prepregs and, epoxy resin-containing)

IT **129401-28-1**  
RL: USES (Uses)  
(adhesives containing, for **copper foil** and phenoplast prepregs)

RN 129401-28-1 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and X-H (9CI) (CA INDEX NAME)

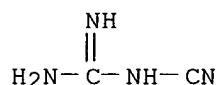
CM 1

CRN 128515-06-0  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

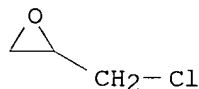
CRN 461-58-5  
CMF C2 H4 N4



CM 3

CRN 106-89-8

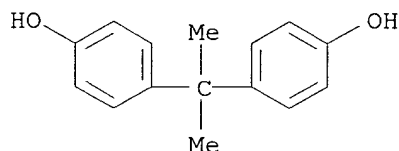
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 27 OF 52 HCA COPYRIGHT 2004 ACS on STN

113:80157 Self-extinguishing butyral resin-epoxy resin adhesives for metal foils. Sakamoto, Toshio (Matsushita Electric Works, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02060979 A2 **19900301** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-212986 19880826.

AB Fire- and heat-resistant adhesives for the manufacture of metal-clad laminates contain butyral resins, brominated bisphenol A-epichlorohydrin epoxy resins, and oligomeric phenol novolaks. A **Cu foil** was coated with an adhesive containing 6000C (butyral resin) 30, YDB 400 70, Resin XH (novolak) 30, dicyandiamide 0.5, and 2E4MZ 0.1 part, dried at 150°, and pressed against a phenolic resin prepreg at 150-170° and 50-120 kg/cm<sup>2</sup> to give a laminate with solder heat resistance 38-42 s, fire resistance rating (UL 94) V-0, and peel strength 2.21-2.27, 2.18-2.21, and 0.63-0.68 kg/cm initially, after solder treatment, and after heating at 150°, resp., vs. 25-28, V-0, 1.93-2.01, 1.85-1.94, and 0.21-0.30, resp., with an adhesive containing 6000C 60, YDB 400 20, and BLS 362 40 parts.

IC ICM C09D163-00

ICA C08G059-06; C08G059-62

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 55, 56, 76

ST metal adhesive epoxy fireproofing; polyvinyl butyral epoxy adhesive; phenolic hardener epoxy adhesive; fire resistance adhesive epoxy; heat resistance adhesive epoxy; bromo epoxy adhesive fireproofing; epoxy adhesive **copper** prepreg

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)

(bisphenol A-based, bromine-containing, adhesives containing, for  
**copper foil** on prepregs)

IT **Adhesives**  
 (fire- and heat-resistant, epoxy resin-poly(vinyl butyral)-novolak, for  
**copper foil** on prepregs)

IT **Electric circuits**  
 (printed, boards, **copper foil** on, epoxy adhesives  
 for, fire-resistant)

IT **128680-97-7**  
 RL: USES (Uses)  
 (adhesives containing, fire- and heat-resistant, for **copper**  
**foil**)

IT 7440-50-8, **Copper**, uses and miscellaneous  
 RL: USES (Uses)  
 (foil, adhesives for, epoxy, fire- and heat-resistant)

IT **128680-97-7**  
 RL: USES (Uses)  
 (adhesives containing, fire- and heat-resistant, for **copper**  
**foil**)

RN 128680-97-7 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane,  
 4,4'-(1-methylethylidene)bis[2,6-dibromophenol] and X-H (9CI) (CA INDEX  
 NAME)

CM 1

CRN 128515-06-0

CMF Unspecified

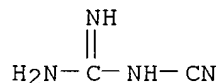
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 461-58-5

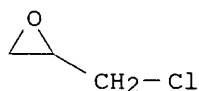
CMF C2 H4 N4



CM 3

CRN 106-89-8

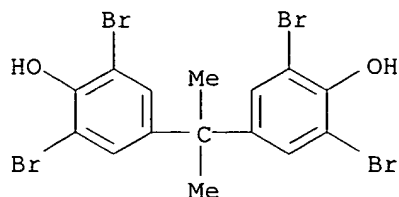
CMF C3 H5 Cl O



CM 4

CRN 79-94-7

CMF C15 H12 Br4 O2



L43 ANSWER 28 OF 52 HCA COPYRIGHT 2004 ACS on STN  
 113:25222 Epoxy resin compositions for adhesives. Okawa, Koji; Yoshioka, Michihiko (Mitsubishi Cable Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01275622 A2 **19891106** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-105805 19880428.

AB The title compns., useful for metal-clad laminates and insulating films, comprise mixts. containing 30-80% reaction products of novolak epoxy resins and bisphenol A-based epoxy resins [epoxy equiv (E) 180-270] and 20-70% bisphenol A-based epoxy resins (E 900-2100), hardeners, and curing accelerators. Thus, 70 parts (solids) ZX 661 (E 482), prepared from YDPN 638 (E 170-190) and YD 128 (E 184-194), was blended with bisphenol A epoxy resin (I, E 949) 30, dicyandiamide 1.5, and 2-ethyl-4-methylimidazole 0.2 part (solids) to give a varnish which was applied on a **Cu foil**, dried, and hot pressed with an Al plate to give a laminate with solder heat resistance (300°) >10 min and T-peel strength (kg/cm) 2.3 initially and 2.2 after a 100-h pressure cooker test, vs. 1, 2.1, and 1.5, resp., without I.

IC ICM C08G059-32  
 ICS C08G059-32

ICA C09J003-16

CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 76

ST epoxy adhesive metal insulator; novolak epoxy adhesive metal; bisphenol epoxy adhesive metal; elec insulator adhesive epoxy; circuit board adhesive epoxy; **copper foil** adhesive epoxy; aluminum adhesive epoxy

IT **Adhesives**  
 (heat-resistant, epoxy resins, elec. insulating, for metals)

IT **Epoxy resins, uses and miscellaneous**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (phenolic, novolak, adhesives, elec. insulating, for metals)

IT **Electric circuits**  
 (printed, boards, adhesives, heat-resistant, epoxy resins as)

IT **127778-34-1**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, elec. insulating, for metals)

IT 7440-50-8, **Copper**, uses and miscellaneous  
 RL: USES (Uses)  
 (foil, adhesives for, epoxy resins as)

IT **127778-34-1**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, elec. insulating, for metals)

RN 127778-34-1 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and ZX 661 (9CI) (CA INDEX NAME)

CM 1

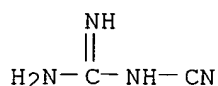


CRN 127464-67-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

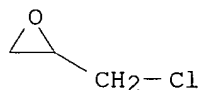
CM 2

CRN 461-58-5  
 CMF C2 H4 N4



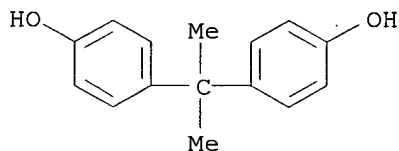
CM 3

CRN 106-89-8  
 CMF C3 H5 Cl O



CM 4

CRN 80-05-7  
 CMF C15 H16 O2



L43 ANSWER 29 OF 52 HCA COPYRIGHT 2004 ACS on STN

113:25220 Epoxy adhesives for bonding insulating polymer films to metal layers in hydrid integrated circuit manufacture. Okawa, Koji; Yoshioka, Michihiko (Mitsubishi Cable Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01276789 A2 19891107 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-105804 19880428.

AB Adhesives for bonding intermediate polyimide insulating films to metal bases and circuit-forming elec. conducting metallic foils comprise 30-80 parts reaction products of a novolak epoxy resin with a bisphenol A-based epoxy resin (I) having epoxy equiv (E) 180-200, 70-20 parts I with E 900-2100, crosslinking agents, and accelerators. Thus, a 60% MEK solution of ZX-661 (epoxy resin, E 482 g/equiv) and a 50% solution of I (E 949 g/equiv) in 1:1 Me Cellosolve/MEK were mixed with 10% solution of dicyandiamide in 1:1 Me Cellosolve/DMF and 1% 2-ethyl-4-methylimidazole in MEK in a solids ratio 70:30:1.5:0.2 to give an adhesive. An assembly of 35- $\mu\text{m}$  Cu foil, 25- $\mu\text{m}$  polyimide film, and 3.0-mm Al base bonded by the adhesive (13  $\mu\text{m}$ -thick) was press-cured 60 min at 180° to give a laminate with peel strength in the Cu

/adhesive **layers** 2.3 and 2.5 kg/cm initially and after the solder-bath heat test resp., and good resistance to solder-bath heat test and pressure-cooker test, vs. 2.1, 0.1, and poor, resp., in absence of the I.

IC ICM H05K001-05

ICA C09J003-16

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST heat resistant epoxy resin adhesive; hybrid integrated circuit epoxy adhesive; novolak epoxy integrated circuit adhesive; polyimide **copper** aluminum laminate adhesive; water resistant epoxy adhesive

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for bonding of polyimide insulator film in hybrid integrated circuit manufacture)

IT **Adhesives**

(heat- and moisture-resistant, epoxy resin-based, for bonding polyimide insulator films in hybrid integrated circuit manufacture)

IT **Electric circuits**

(hybrid integrated, adhesives for manufacture of, epoxy resin-based, with improved heat and moisture resistance)

IT **127778-34-1P**

RL: TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(adhesives, manufacture of, for bonding polyimide insulator films in hybrid integrated circuit manufacture)

IT 7440-50-8, **Copper**, uses and miscellaneous

RL: USES (Uses)

(foil, adhesive for bonding of, epoxy-resin-based, in hybrid integrated circuit manufacture)

IT **127778-34-1P**

RL: TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(adhesives, manufacture of, for bonding polyimide insulator films in hybrid integrated circuit manufacture)

RN 127778-34-1 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and ZX 661 (9CI) (CA INDEX NAME)

CM 1

CRN 127464-67-9

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 461-58-5

CMF C2 H4 N4

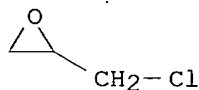
NH

||

H<sub>2</sub>N-C-NH-CN

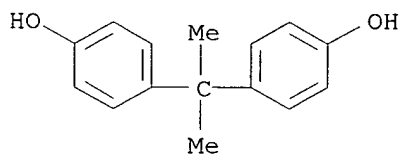
CM 3

CRN 106-89-8  
CMF C3 H5 Cl O



CM 4

CRN 80-05-7  
CMF C15 H16 O2



L43 ANSWER 30 OF 52 HCA COPYRIGHT 2004 ACS on STN

113:7756 Adhesives for electroless plating in printed circuit board manufacture. Asai, Motoo; Enomoto, Akira (Ibiden Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02008283 A2 19900111 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-158169 19880628.

AB Title adhesives with good heat resistance, elec. insulating properties, and chemical stability contain hardener-treated heat-resistant polymer particles [average diameter (D) <10 µm] and micropowder (average diameter <0.3 µm). Epikote 154 60, Epikote 1001 40, 2P4MHZ (imidazol derivative hardener) 4, Toraypearl EP-B with D 3.9 µm 5, and with D 0.5 µm 25 parts were dissolved in butyl Cellosolve to give a composition with viscosity 120 cP, which was applied on a polyimide substrate, dried, roughened with aqueous Cr2O3, chemical plated to form a 25-µm **Cu layer**, and elec. plated to form a 35-µm **Cu layer** to give a composite having peel strength (**Cu layer**) 1.83 kg/cm and surface resistivity 7 + 1014 and 3 + 1013 Ω-cm, before and after dipped 2 h in boiling water.

IC ICM C09J201-00

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Adhesives**

(dielec., heat-resistant, epoxy resin-phenolic resin-based, for electroless plating in printed circuit board manufacture)

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)  
(phenolic, adhesives, heat-resistant, for electroless plating in printed circuit board manufacture)

IT **Electric circuits**

(printed, boards, adhesives for, epoxy-phenolic resin compns. as, heat-resistant and elec. insulating)

IT 127602-67-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat-resistant, for electroless plating in printed circuit board manufacture)

IT 127602-67-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat-resistant, for electroless plating in printed circuit board manufacture)

RN 127602-67-9 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, Epikote 154 and Toraypearl EP-B (9CI) (CA INDEX NAME)

CM 1

CRN 118367-92-3

CMF Unspecified

CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 63939-13-9

CMF Unspecified

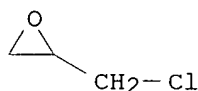
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 106-89-8

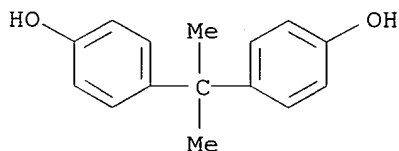
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 31 OF 52 HCA COPYRIGHT 2004 ACS on STN

112:200220 Moisture- and water-resistant epoxy resin adhesive compositions. Furuhashi, Toshikazu; Suzuki, Goro (Mitsui Petrochemical Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01272681 A2 19891031 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-103580 19880426.

AB Storage-stable title compns. useful for elec. and electronic devices contain dicyandiamide (I)-monoepoxide adducts as hardeners. Thus, 150 g composition containing Nipol 1072 27.2, MEK 185.3, brominated bisphenol A epoxy resin 50.0, BREN-S 10.0, and Hycar CTBN 1300X13 7.0 parts was blended with 30 g hardener containing 1:1 (molar) p-sec-butylphenyl glycidyl ether-I adduct (II) 7.7, 3-(p-chlorophenyl)-1,1-dimethylurea 2.5, and methyl Cellosolve 45.7 parts to give a title adhesive, which was applied on a Kapton film, dried 4 min at 130°, and hot pressed with a Cu

foil at 120° and 10 kg/cm<sup>2</sup> for 1 h to give a laminate showing 180° peel strength 2.1 kg/cm and good solder resistance at 300° even after 24 h at 23° and 60% relative humidity, vs. 2.4 and poor, resp., using I instead of II.

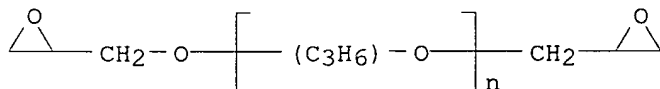
- IC ICM C09J003-16  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 76  
 ST epoxy resin adhesive water resistance; moisture resistance adhesive epoxy resin; dicyandiamide hardener epoxy resin adhesive; epoxide dicyandiamide adduct hardener; printed circuit adhesive epoxy resin; **copper** laminate adhesive epoxy resin  
 IT **Epoxy resins, uses and miscellaneous**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, hardeners for, dicyandiamide-epoxide adducts as, for improved water resistance)  
 IT **Electric circuits**  
 (printed, boards, **copper**-clad laminates, adhesives for, epoxy resins containing dicyandiamide-epoxide adducts as)  
 IT **Adhesives**  
 (storage-stable, water-resistant, epoxy resins, containing dicyandiamide-epoxide adducts, for elec. and electronic parts)  
 IT 25068-38-6, Bisphenol A-epichlorohydrin copolymer. 93195-67-6, BREN-S  
**126939-62-6**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, hardeners for, dicyandiamide-epoxide adducts as, for improved water resistance)  
 IT **126939-62-6**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, hardeners for, dicyandiamide-epoxide adducts as, for improved water resistance)  
 RN 126939-62-6 HCA  
 CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with  $\alpha$ -(2-aminomethylethyl)- $\omega$ -(2-aminomethylethoxy)poly[oxy(methyl-1,2-ethanediyl)], (chloromethyl)oxirane and  $\alpha$ -(oxiranylmethyl)- $\omega$ -(oxiranylmethoxy)poly[oxy(methyl-1,2-ethanediyl)] (9CI) (CA INDEX NAME)

CM 1

CRN 26142-30-3

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>10</sub> O<sub>3</sub>

CCI IDS, PMS

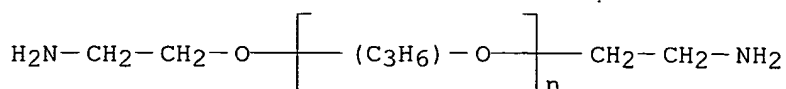


CM 2

CRN 9046-10-0

CMF (C<sub>3</sub> H<sub>6</sub> O)<sub>n</sub> C<sub>6</sub> H<sub>16</sub> N<sub>2</sub> O

CCI IDS, PMS

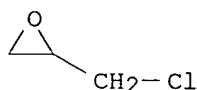


2 ( D1-Me )

CM 3

CRN 106-89-8

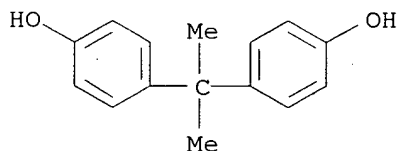
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 32 OF 52 HCA COPYRIGHT 2004 ACS on STN

112:160086 Epoxy resin adhesives for bonding metal foils to substrates for electric circuit boards. Nemoto, Akimi; Ito, Akiyoshi; Nakano, Yoshitomo; Kada, Masumi (Mitsubishi Petrochemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01254787 A2 19891011 Heisei, 5 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1988-82639 19880404.

AB The adhesives comprise 100 parts of a mixture of epoxy resins having  $\geq 2$  epoxy groups/mol. and linear high-mol.-weight cresol novolak resins with number-average mol. weight  $\geq 1500$  at equivalent ratio of epoxy groups to phenolic OH groups 1:0.5-1.5 and 8-60 parts CO<sub>2</sub>H-containing acrylonitrile-butadiene copolymers which are solid at room temperature. Thus, 108 g o-cresol was treated with 32 g paraformaldehyde in Et Cellosolve in the presence of aqueous H<sub>2</sub>SO<sub>4</sub> to give a novolak resin (I) with number-average

mol. weight 2600 and OH equivalent weight 120, 40 parts of which was mixed with Epikote

828 60, Nipol 1072 20, 2E4MZ (2-ethyl-4-methylimidazole) 0.3, MEK 80, and MePh 40 parts to give an adhesive. The adhesive was spread on 130- $\mu\text{m}$  glass cloth-epoxy sheets at 30- $\mu\text{m}$  dry thickness, dried at 140° for 5 min, laminated with 35- $\mu\text{m}$  Cu foils at 160°, 1 m/min, and 1 kg/cm<sup>2</sup>, then cured at 170° for 1 h to give Cu-clad test specimens, which showed 90° peel strength at 25 and 150° 2.0 and 1.3 kg/cm, resp., and solder

resistance at 300° 60 s, vs. 1.7, 0.6, and 10, resp., for a similar composition containing o-cresol novolak resin with number-average mol. weight 600 instead of

I.

IC ICM C09J003-16

ICA C08G059-40

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 55, 56, 76

ST epoxy resin adhesive **copper foil**; solder resistance

epoxy resin adhesive

IT **Epoxy resins, uses and miscellaneous**

RL: USES (Uses)

(glass fiber-reinforced, sheets, bonding metal foils to, adhesives for)

IT **Adhesives**

(heat-resistant, epoxy phenolic resins, with carboxy-containing nitrile rubber, for bonding metal foils to substrates, with good fluidity)

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)

(phenolic, adhesives, with carboxy-containing nitrile rubber, for bonding metal foils to substrates, with good fluidity and solder resistance)

IT **Electric circuits**

(printed, adhesives for lamination of metal foils in manufacture of)

IT **67626-89-5D**, reaction products with acrylonitrile-butadiene-

methacrylic acid copolymer rubber **106056-01-3D**, reaction

products with acrylonitrile-butadiene-methacrylic acid copolymer rubber

**126367-05-3D**, reaction products with acrylonitrile-butadiene-

methacrylic acid copolymer rubber **126419-39-4D**, reaction

products with acrylonitrile-butadiene-methacrylic acid copolymer rubber

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for bonding metal foils to substrates, with good fluidity and solder resistance)

IT 7440-50-8, **Copper**, uses and miscellaneous

RL: USES (Uses)

(foils, adhesives for, epoxy phenolic resins containing carboxy-containing acrylonitrile-butadiene copolymers, with good fluidity and solder resistance)

IT **67626-89-5D**, reaction products with acrylonitrile-butadiene-

methacrylic acid copolymer rubber **106056-01-3D**, reaction

products with acrylonitrile-butadiene-methacrylic acid copolymer rubber

**126367-05-3D**, reaction products with acrylonitrile-butadiene-

methacrylic acid copolymer rubber **126419-39-4D**, reaction

products with acrylonitrile-butadiene-methacrylic acid copolymer rubber

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for bonding metal foils to substrates, with good fluidity and solder resistance)

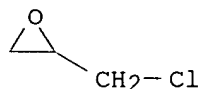
RN 67626-89-5 HCA

CN Formaldehyde, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and 2-methylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 106-89-8

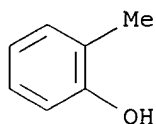
CMF C3 H5 Cl O



CM 2

CRN 95-48-7

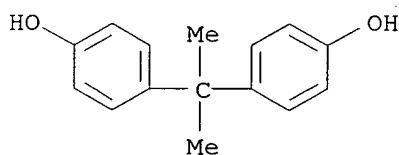
CMF C7 H8 O



CM 3

CRN 80-05-7

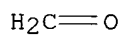
CMF C15 H16 O2



CM 4

CRN 50-00-0

CMF C H2 O



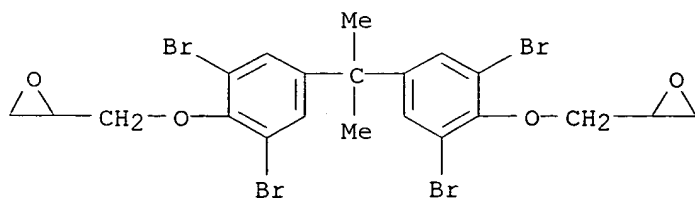
RN 106056-01-3 HCA

CN Formaldehyde, polymer with (chloromethyl)oxirane, 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxymethylene]]bis[oxirane], 4,4'-[(1-methylethylidene)bis[phenol] and 2-methylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 3072-84-2

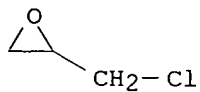
CMF C21 H20 Br4 O4



CM 2

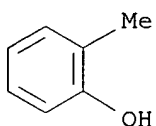


CRN 106-89-8  
CMF C3 H5 Cl O



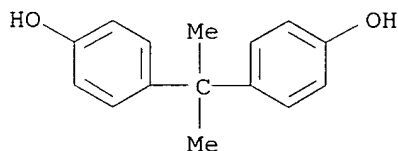
CM 3

CRN 95-48-7  
CMF C7 H8 O



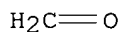
CM 4

CRN 80-05-7  
CMF C15 H16 O2



CM 5

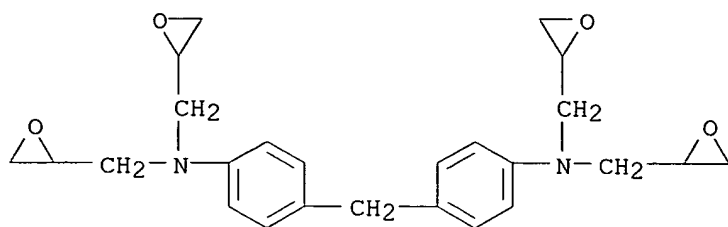
CRN 50-00-0  
CMF C H2 O



RN 126367-05-3 HCA  
CN Formaldehyde, polymer with (chloromethyl)oxirane, N,N'-(methylenedi-4,1-phenylene)bis[N-(oxiranylmethyl)oxiranemethanamine], 4,4'-(1-methylethylidene)bis[phenol] and 2-methylphenol (9CI) (CA INDEX NAME)

CM 1

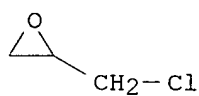
CRN 28768-32-3  
CMF C25 H30 N2 O4



CM 2

CRN 106-89-8

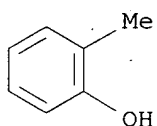
CMF C3 H5 Cl O



CM 3

CRN 95-48-7

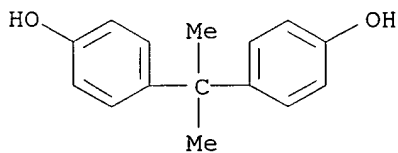
CMF C7 H8 O



CM 4

CRN 80-05-7

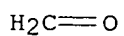
CMF C15 H16 O2



CM 5

CRN 50-00-0

CMF C H2 O



RN 126419-39-4 HCA

CN Formaldehyde, polymer with (chloromethyl)oxirane, Epikote 152,

4,4'-(1-methylethylidene)bis[phenol] and 2-methylphenol (9CI) (CA INDEX NAME)

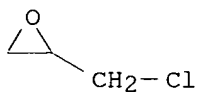
CM 1

CRN 84778-06-3  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

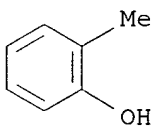
CM 2

CRN 106-89-8  
CMF C3 H5 Cl O



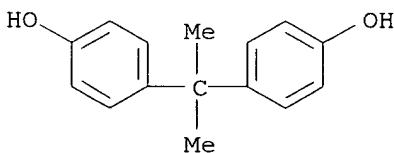
CM 3

CRN 95-48-7  
CMF C7 H8 O



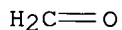
CM 4

CRN 80-05-7  
CMF C15 H16 O2



CM 5

CRN 50-00-0  
CMF C H2 O



L43 ANSWER 33 OF 52 HCA COPYRIGHT 2004 ACS on STN  
112:120258 Epoxy resin adhesives for metal-clad laminates as circuit boards.  
Tomita, Itsuo; Era, Tsutomu (Matsushita Electric Works, Ltd., Japan).

Jpn. Kokai Tokkyo Koho JP 01225683 A2 **19890908** Heisei, 3 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-51836 19880304.

AB The title adhesives comprise epoxy resins (epoxy equiv 600-3300), phenol novolak epoxy resins, and butyral resins. An epoxy resin-impregnated glass cloth was placed on a metal plate and covered with a **Cu foil** coated with an adhesive containing Epikote 1002 40, Epikote 154 10, butyral resin 40, melamine resin 7.95, isocyanate 2, BF3 400 0.05, MEK 50, and MeOH 50 parts. The foil was pressed at 165° and 40 kg/cm<sup>2</sup> for 90 min to give a metal laminate having good punching quality and peel strength 1.32 and 0.47 kg/cm, resp., at 120 and 150°, vs. cracking, 0.81, and 0.14, resp., with Epikote 828 instead of Epikote 1002 and Epikote 154.

IC ICM C09J003-16  
ICS C09J003-16

ICA B32B007-12; B32B015-08

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 55, 56, 76

ST epoxy adhesive **copper** circuit board; elec circuit board adhesive; butyral resin epoxy adhesive; phenol novolak epoxy adhesive

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(adhesives containing, for **copper foil** on circuit board)

IT **Adhesives**  
(epoxy-butyral resin, for **copper foil** on circuit board)

IT Vinyl acetal polymers  
RL: USES (Uses)  
(butyrals, adhesives containing, for **copper foil** on circuit board)

IT Phenolic resins, uses and miscellaneous  
RL: USES (Uses)  
(epoxy, novolak, adhesives containing, for **copper foil** on circuit board)

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(phenolic, novolak, adhesives containing, for **copper foil** on circuit board)

IT **Electric circuits**  
(printed, boards, adhesives for **copper foil** on)

IT **125717-51-3**  
RL: USES (Uses)  
(adhesives containing, for **copper foil** on circuit board)

IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(foil, lamination of, adhesives for)

IT **125717-51-3**  
RL: USES (Uses)  
(adhesives containing, for **copper foil** on circuit board)

RN 125717-51-3 HCA

CN Formaldehyde, polymer with (chloromethyl)oxirane, Epikote 154, 4,4'-(1-methylethylidene)bis[phenol] and 1,3,5-triazine-2,4,6-triamine (9CI) (CA INDEX NAME)

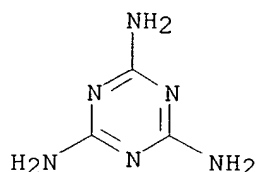
CM 1

CRN 63939-13-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

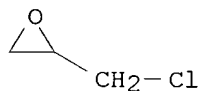
CM 2

CRN 108-78-1  
CMF C3 H6 N6



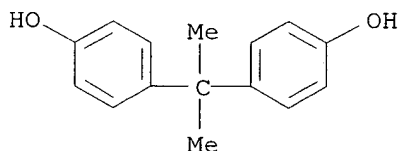
CM 3

CRN 106-89-8  
CMF C3 H5 Cl O



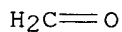
CM 4

CRN 80-05-7  
CMF C15 H16 O2



CM 5

CRN 50-00-0  
CMF C H2 O



L43 ANSWER 34 OF 52 HCA COPYRIGHT 2004 ACS on STN  
112:120226 Adhesive compositions for **copper**-clad laminates for  
electric circuit boards. Odajima, Toru; Arai, Akihiro; Goto, Manabu;  
Morimoto, Yoshio (Sony Chemical Corp., Japan; Mitsui Toatsu Chemicals,  
Inc.). Jpn. Kokai Tokkyo Koho JP 01178572 A2 **19890714** Heisei, 4  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-1637 19880107.

- AB Adhesives exhibiting good tracking resistance comprise 100 parts copolymers of isopropenylphenol, Et or Me acrylate (I), Et or Me methacrylate (II), glycidyl methacrylate (III), and acrylonitrile (IV), 10-80 parts epoxy resins, and 10-60 parts phenolic resins. A copolymer (V; mol. weight 179,000) prepared by polymerizing p-isopropenylphenol 30, III
- 10, I 20, II 20, and IV 20 parts in MEK in the presence of AIBN was mixed (100 parts) with 10 parts EP 828 (epoxy resin) and 20 parts PR 51556 (phenolic resin) in MEK, PhMe, and MeOH to give an adhesive. The adhesive was placed between **Cu foils** and phenol-HCHO copolymer-impregnated kraft paper and pressed 60 min at 170° and 80 kg/cm<sup>2</sup> to give a laminate having **Cu** peel strength 2.00 kg/cm, solder resistance (JIS C6481) 32.0 s, surface resistivity 1012 Ω, and tracking resistance (CTI method) 89 drops, vs. 1.98, 33.5, 1012, and 20, resp., with BX-2 (butyral resin) instead of V.
- IC ICM C09J003-16
- ICA B32B015-08; C08G059-40; H05K003-38
- CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76
- ST adhesive **copper** lamination phenoplast; acrylic adhesive **copper** phenoplast; epoxy adhesive **copper** phenoplast; phenolic resin adhesive **copper**; tracking resistance adhesive **copper**; elec tracking resistance adhesive; circuit board **copper** adhesive
- IT **Adhesives**  
(acrylic-epoxy-phenolic, for **copper** on phenoplasts, tracking-resistant)
- IT Phenolic resins, uses and miscellaneous  
RL: TEM (Technical or engineered material use); USES (Uses)  
(acrylic-epoxy, adhesives, for **copper foil** on phenoplasts, tracking-resistant)
- IT **Epoxy resins, uses and miscellaneous**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(acrylic-phenolic, adhesives, for **copper foil** on phenoplasts, tracking-resistant)
- IT Acrylic polymers, uses and miscellaneous  
RL: TEM (Technical or engineered material use); USES (Uses)  
(epoxy-phenolic, adhesives, for **copper foil** on phenoplasts, tracking-resistant)
- IT **Electric circuits**  
(printed, boards, **copper foil** on phenoplast-based, adhesives for)
- IT **125690-99-5** 125691-00-1 125691-01-2 125717-18-2 125723-27-5  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for **copper foil** on phenoplast laminate, tracking-resistant)
- IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(foils, adhesives for phenoplast laminates and, tracking-resistant)
- IT 9003-35-4, Phenol-formaldehyde copolymer  
RL: USES (Uses)  
(laminates, adhesives for **copper foil** on, tracking-resistant)
- IT **125690-99-5**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for **copper foil** on phenoplast laminate, tracking-resistant)

RN 125690-99-5 HCA  
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with  
(chloromethyl)oxirane, 4-(1-methylethenyl)phenol, 4,4'-(1-  
methylethylidene)bis[phenol], methyl 2-propenoate, oxiranylmethyl  
2-methyl-2-propenoate, PR 51556 and 2-propenenitrile (9CI) (CA INDEX  
NAME)

CM 1

CRN 125523-93-5

CMF Unspecified

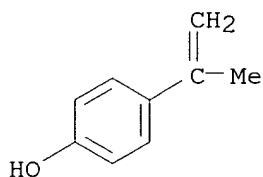
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 4286-23-1

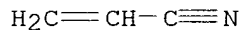
CMF C9 H10 O



CM 3

CRN 107-13-1

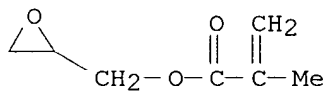
CMF C3 H3 N



CM 4

CRN 106-91-2

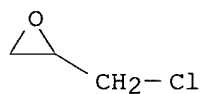
CMF C7 H10 O3



CM 5

CRN 106-89-8

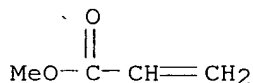
CMF C3 H5 Cl O



CM 6

CRN 96-33-3

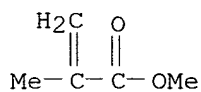
CMF C4 H6 O2



CM 7

CRN 80-62-6

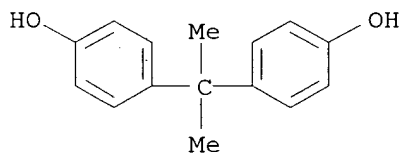
CMF C5 H8 O2



CM 8

CRN 80-05-7

CMF C15 H16 O2

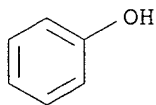


L43 ANSWER 35 OF 52 HCA COPYRIGHT 2004 ACS on STN  
 112:57863 Adhesive compositions for fireproof flexible printed circuit boards.  
 Sakaguchi, Saneteru; Eikuchi, Kichiji (Shin-Etsu Chemical Industry Co.,  
 Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01161046 A2 **19890623**  
 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-319299  
 19871216.

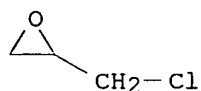
AB Title compns. are composed of 100 parts polyesters with acid number 70-150,  
 20-100 parts mixts. of 10-90% epoxy resins and 10-90% phenolic resins,  
 10-70 parts fireproofing agents, and 0.5-10 parts hardening accelerators.  
 Thus, a 30% dioxane solution of Toyobo Polyester 297 (acid number 120-140  
 equiv/106 g, softening temperature 180°, I) 100, 35/15/50 Epikote  
 828/Epikote 154 (novolak epoxy resin)/novolak phenol formaldehyde resin  
 mixture 50, KC01 (hardener) 2, and 1/5 Sb2O3/BT-93  
 (ethylenebistetrabromophthalimide) (II) was applied on Kapton 100H  
 (polyimide film), dried, and laminated with a **Cu-foil**,  
 and then post-cured at 80°/2 h and 170°/3 h to give a  
 laminate showing peeling strength (JIS C6481) 2.0 kg/cm, and swelling  
 temperature in soldering bath 300 and 270° originally and after 1 h at  
 40° and 90% relative humidity, vs. 1.4, 270, and 230, resp., for a  
 laminate similarly prepared using Toyobo Polyester 200 (acid number 20-50,  
 softening temperature 163°) and poly(dibromophenylene oxide) instead of I  
 and II.



IC ICM C08L067-02  
ICS C09J003-16  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76  
IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(adhesives containing polyesters and, for flexible printed circuit board manufacture)  
IT **Adhesives**  
(for flexible printed circuit board manufacture, fireproofed polyester-epoxy resin-phenolic resins as)  
IT **Electric circuits**  
(printed, boards, flexible, adhesives for manufacture of, polyester-epoxy resin-phenolic resins as, containing fireproofing agents)  
IT **68664-47-1**  
RL: USES (Uses)  
(adhesives containing polyesters and, for flexible printed circuit board manufacture)  
IT 25036-53-7P, Kapton 100H  
RL: PREP (Preparation)  
(~~copper~~-clad laminates for printed circuit boards, adhesive compns. for manufacture of)  
IT 7440-50-8, **Copper**, uses and miscellaneous  
RL: USES (Uses)  
(foils, adhesive compns. for laminates with polyimide film)  
IT **68664-47-1**  
RL: USES (Uses)  
(adhesives containing polyesters and, for flexible printed circuit board manufacture)  
RN 68664-47-1 HCA  
CN Formaldehyde, polymer with (chloromethyl)oxirane, Epikote 154,  
4,4'-(1-methylethylidene)bis[phenol] and phenol (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 63939-13-9  
CMF Unspecified  
CCI PMS, MAN  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
  
CM 2  
  
CRN 108-95-2  
CMF C6 H6 O



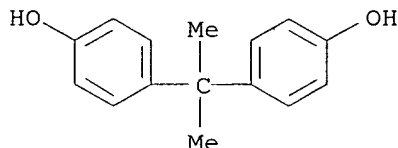
CM 3  
  
CRN 106-89-8  
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

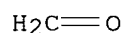
CMF C15 H16 O2



CM 5

CRN 50-00-0

CMF C H2 O



L43 ANSWER 36 OF 52 HCA COPYRIGHT 2004 ACS on STN

112:57823 Adhesive compositions for flexible printed circuit boards.

Yamamoto, Kunihiro (Mitsui Toatsu Chemicals, Inc., Japan). Jpn. Kokai

Tokkyo Koho JP 01158088 A2 **19890621** Heisei, 7 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1987-307486 19871207. PRIORITY: JP

1987-244949 19870929.

AB Title compns. with low tackiness, good solder heat resistance and insulating properties, and long pot life contain aqueous acrylic polymer solns. prepared by polymerizing acrylonitrile and/or styrene, (meth)acrylate esters, acrylic acids and/or acrylamides, and hydroxyalkyl (meth)acrylates in H<sub>2</sub>O in the presence of epoxides. Acrylonitrile 25, styrene 10, 2-ethylhexyl acrylate 54, methacrylic acid 1, acrylamide 2, 2-hydroxyethyl acrylate 4, and YDPN 638 4 parts were polymerized in H<sub>2</sub>O in the presence of K<sub>2</sub>S<sub>2</sub>O<sub>8</sub> at 70° and neutralized to give a copolymer solution (50% solids). A Kapton film was coated with the solution, dried, semicured, and laminated with an OPP film to give a cover lay sheet. Another Kapton film coated with the solution was laminated with a **Cu foil** to give a flexible laminate which was hot pressed with the cover lay sheet to give a test piece having volume resistivity 1.5 + 10<sup>12</sup> Ω and adhesive peel strength 1.5 and 1.3 kg/cm, resp., before and after 240 h at 105°.

IC ICM C09J003-16

ICA C08G059-40; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, acrylic polymer-containing, for circuit boards)

IT **Adhesives**

(heat-resistant, acrylic polymer-epoxy resin, for printed circuit boards)

IT **Electric circuits**

(printed, boards, flexible, adhesives for, acrylic polymer-epoxy resin)

IT 124767-78-8 **124767-79-9** 124767-80-2 124767-81-3  
**124767-82-4** 124825-62-3 124848-31-3 124949-99-1

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, solder-resistant, insulating, for flexible circuit boards)

IT **124767-79-9 124767-82-4**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, solder-resistant, insulating, for flexible circuit boards)

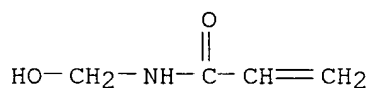
RN 124767-79-9. HCA

CN 2-Propenoic acid, butyl ester, polymer with (chloromethyl)oxirane,  
 2-ethylhexyl 2-propenoate, N-(hydroxymethyl)-2-propenamide,  
 4,4'-(1-methylethylidene)bis[phenol] and 2-propenenitrile (9CI) (CA INDEX  
 NAME)

CM 1

CRN 924-42-5

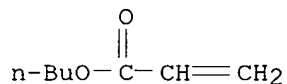
CMF C4 H7 N O2



CM 2

CRN 141-32-2

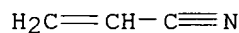
CMF C7 H12 O2



CM 3

CRN 107-13-1

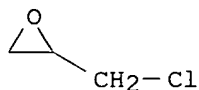
CMF C3 H3 N



CM 4

CRN 106-89-8

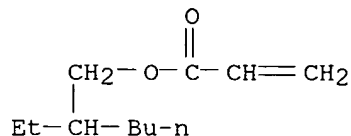
CMF C3 H5 Cl O



CM 5

CRN 103-11-7

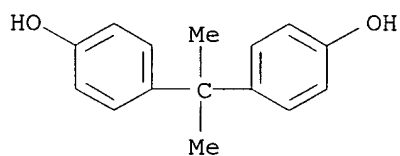
CMF C11 H20 O2



CM 6

CRN 80-05-7

CMF C15 H16 O2



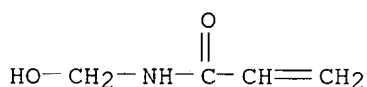
RN 124767-82-4 HCA

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with butyl 2-propenoate, (chloromethyl)oxirane, N-(hydroxymethyl)-2-propenamide, 4,4'-(1-methylethylidene)bis[phenol] and 2-propenenitrile (9CI) (CA INDEX NAME)

CM 1

CRN 924-42-5

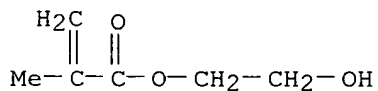
CMF C4 H7 N O2



CM 2

CRN 868-77-9

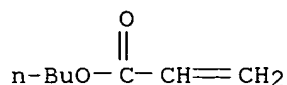
CMF C6 H10 O3



CM 3

CRN 141-32-2

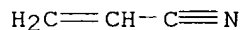
CMF C7 H12 O2



CM 4

CRN 107-13-1

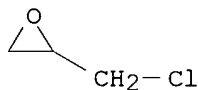
CMF C3 H3 N



CM 5

CRN 106-89-8

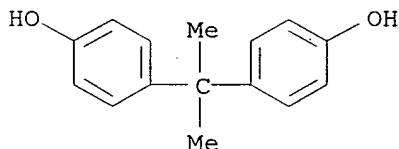
CMF C3 H5 Cl O



CM 6

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 37 OF 52 HCA COPYRIGHT 2004 ACS on STN

112:57780 Heat-resistant resin compositions for adhesives and coatings.

Nakamura, Masaaki; Uno, Keiichi (Toyobo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01092218 A2 **19890411** Heisei, 7 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1987-66681 19870319.

AB Flame-retardant and fast-curing title compns., useful for manufacture of printed circuit boards, comprise saturated polyesters containing  $\geq 20$  mol% alkylene terephthalate repeating units 10-70, modified epoxy resins 4-88, and melamine resins 2-26%. Thus, a mixture comprising Vylon 560 (I) 47, EB 242 55MT (epoxy resin) 47, and Cymel 303 6 parts, and p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>H 0.4% in toluene/MEK (40% solid) was applied on a polyester film, dried, and laminated with a **Cu foil** to obtain a flexible printed board not requiring post-curing and showing adhesion strength 2.2 kg/cm, good soldering-resistance, and no dripping in fire-resistant test (UL94 V-D), vs. requiring post-curing, 2.1 kg/cm<sup>2</sup>, swelling by soldering, and some drips, resp., for a similar laminate containing isocyanate resin instead of Cymel 303 and EB 242 55MT.

IC ICM C08G059-40

ICS C08G059-40; C08L061-28; C08L063-00; C08L067-02  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 42, 76  
IT **Epoxy resins, uses and miscellaneous**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing polyesters and melamine resins, for manufacture of printed circuit boards)  
IT **Adhesives**  
(fire- and heat-resistant, rapid-setting, epoxy resin-melamine resin-polyester blends, for manufacture of printed circuits)  
IT **Electric circuits**  
(printed, boards, metal-clad laminates, adhesives for manufacture of, epoxy resin-melamine resin-polyester blends as, with good heat resistance)  
IT **124660-65-7** 124825-15-6  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, fast-curing, with good heat- and fire resistance, for manufacture of printed circuit boards)  
IT **124660-65-7**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, fast-curing, with good heat- and fire resistance, for manufacture of printed circuit boards)  
RN 124660-65-7 HCA  
CN 1,4-Benzenedicarboxylic acid, polymer with (chloromethyl)oxirane, decanedioic acid, 2,2-dimethyl-1,3-propanediol, 1,2-ethanediol, formaldehyde, 4,4'-(1-methylethylidene)bis[2,6-dibromophenol], 1,3,5-triazine-2,4,6-triamine and Vylon 200 (9CI) (CA INDEX NAME)

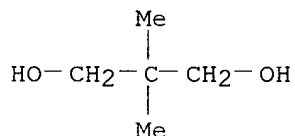
CM 1

CRN 37337-82-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

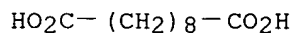
CM 2

CRN 126-30-7  
CMF C5 H12 O2



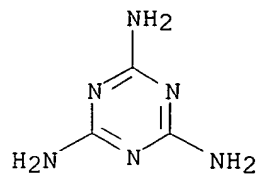
CM 3

CRN 111-20-6  
CMF C10 H18 O4



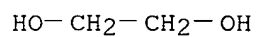
CM 4

CRN 108-78-1  
CMF C3 H6 N6



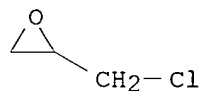
CM 5

CRN 107-21-1  
CMF C2 H6 O2



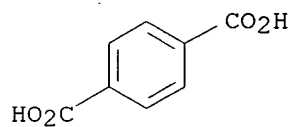
CM 6

CRN 106-89-8  
CMF C3 H5 Cl O



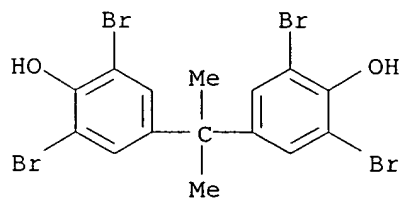
CM 7

CRN 100-21-0  
CMF C8 H6 O4



CM 8

CRN 79-94-7  
CMF C15 H12 Br4 O2



CM 9

CRN 50-00-0

CMF C H2 O

 $\text{H}_2\text{C}=\text{O}$ 

L43 ANSWER 38 OF 52 HCA COPYRIGHT 2004 ACS on STN

112:37610 Epoxy resin adhesives for flexible printed circuit boards.

Nishikawa, Takashi; Okamura, Masana (Sunstar Engineering, Inc., Japan).

Jpn. Kokai Tokkyo Koho JP 01113477 A2 **19890502** Heisei, 4 pp.

(Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-271281 19871026.

AB Heat-resistant title adhesives with good bonding strength between plastic films and metal foils comprise epoxy resins 100, epoxy-containing monomers-grafted rubbers 10-40, vulcanized rubber microparticles 1-20 parts, and curing agents. Thus, a mixture of Hycar CTBN 1300 + 31 20, S 2, vulcanizing accelerators 1.8, ZnO 0.8, and stearic acid 1.2 part was added to 80 parts Epikote 828 at 120°, then stirred for 3 h to give a solution containing 24.4% vulcanized rubber microparticles, 15 parts of which was mixed with 17.4% MEK solution of glycidyl methacrylate-grafted Hycar 1032 (I; nitrile rubber) 50, 50% MEK solution of Epikote 1001 (II) 60, MTA-18 (acid anhydrides) (III) 25, and MEK 10 parts to give an adhesive. A 35- $\mu\text{m}$  **Cu foil** was coated with the adhesive at 20- $\mu\text{m}$  thickness, dried with air at 100° for 15 min, laminated with a 25- $\mu\text{m}$  polyimide film, pressed at 120° and 10 kg/cm<sup>2</sup>, cured at 150° for 30 min, and cut at 1 cm width to give solder-resistant test pieces, which showed peeling strength 2.3 kg/cm at normal condition, 2.1 kg/cm after 72-h storage at 85° and 85% relative humidity, and 2.0 kg/cm after 72-h immersion in water at 50°, vs. 1.6, 1.1, 1.1, resp., for an adhesive comprising I, II, III, and MEK.

IC ICM C09J003-16

ICS C09J003-14; H05K003-38

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for flexible printed elec. circuit boards)

IT **Adhesives**

(heat-resistant, nitrile rubber-crosslinked epoxy resins, for flexible printed elec. circuit boards)

IT **Electric circuits**

(printed, boards, flexible, adhesives for, nitrile rubber-crosslinked epoxy resins, heat-resistance)

IT **124679-36-3**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for flexible printed circuit boards)

IT **124679-36-3**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for flexible printed circuit boards)

RN 124679-36-3 HCA

CN 2-Propenoic acid, 2-methyl-, oxiranylmethyl ester, polymer with 1,3-butadiene, (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol], 2-propenenitrile and Rikaresin MTA 18 (9CI)  
(CA INDEX NAME)



CM 1

CRN 112002-41-2

CMF Unspecified

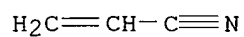
CCI MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 107-13-1

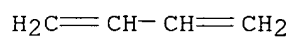
CMF C3 H3 N



CM 3

CRN 106-99-0

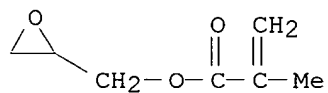
CMF C4 H6



CM 4

CRN 106-91-2

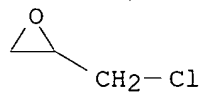
CMF C7 H10 O3



CM 5

CRN 106-89-8

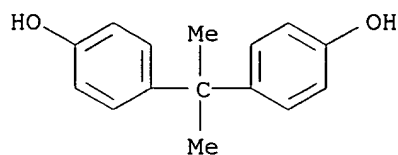
CMF C3 H5 Cl O



CM 6

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 39 OF 52 HCA COPYRIGHT 2004 ACS on STN

110:155776 Preparation and use of epoxy resin-based adhesives in circuit board manufacture. Kondo, Mitsuhiro; Yamamoto, Tsukasa (Ibiden Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63248883 A2 **19881017** Showa, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-81825 19870402.

AB Thixotropic adhesives with viscosity 200-500 P contain 10-90% UV-curable epoxy methacrylate resin, 10-90% heat-curable epoxy resin composition, fillers, and thixotropic agents and are applied by screen printing in the bonding of **Cu foil** to substrates in the manufacture of printed circuit boards. A blend of 2 parts 100:75:3.5 bisphenol A epoxy resin methacrylate (Neopol 8104)-diallyl phthalate-benzophenone mixture and 1 part 100:4.0 Epikote 828-dicyandiamide mixture was mixed. with TiO<sub>2</sub> 33, talc 8.3, and powdered silica 8.3 phr to give a storage-stable adhesive which was used to bond **Cu foil** to a substrate, giving peel strength (kg/cm) 2.0 initially, 1.9 after 240 h at 150°, and 1.5 after 100 h in a pressure cooker (121°, 2 atm).

IC ICM C09J003-16

ICS C09J003-16

CC 38-3 (Plastics Fabrication and Uses)

ST methacrylate epoxy photocuring adhesive; adhesive epoxy methacrylate curing; crosslinking adhesive heat UV; **copper** adhesive circuit board; elec circuit board adhesive; thixotropy adhesive circuit board

IT **Epoxy resins, uses and miscellaneous**

RL: USES (Uses)

(photocurable and thermosetting, adhesives containing, for printed circuit manufacture)

IT **Adhesives**

(photocurable, epoxy methacrylate-containing, in printed circuit manufacture)

IT **Electric circuits**

(printed, boards, manufacture of, adhesives for)

IT **Adhesives**

(thermosetting, epoxy, in printed circuit manufacture)

IT **118317-62-7**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, thixotropic, UV- and heat-curable, for circuit boards)

IT **118317-62-7**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, thixotropic, UV- and heat-curable, for circuit boards)

RN 118317-62-7 HCA

CN 1,2-Benzenedicarboxylic acid, di-2-propenyl ester, polymer with (chloromethyl)oxirane, 4,4'-(1-methylethylidene)bis[phenol] and Neopol 8104 (9CI) (CA INDEX NAME)

CM 1

CRN 84683-18-1

CMF Unspecified

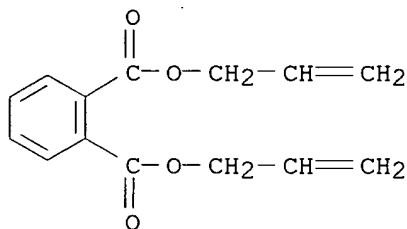
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 131-17-9

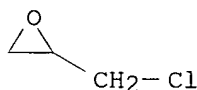
CMF C14 H14 O4



CM 3

CRN 106-89-8

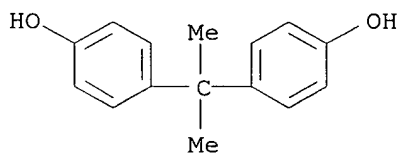
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



I43 ANSWER 40 OF 52 HCA COPYRIGHT 2004 ACS on STN

110:9373 Adhesives for flexible printed circuit boards. Nishikawa, Junichiro (Sumitomo Electric Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63122773 A2 **19880526** Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-268052 19861111.

AB The adhesives with good solvent and heat resistance are prepared from 60-90:10-50:2-10 acrylic ester-acrylonitrile (I)-methacrylic acid (II) copolymers 100, epoxy resins with  $\geq 2$  epoxy groups 25-250, and poly(vinyl phenol) (III) 10-100 parts. A mixture of 20:73:7 I-Bu acrylate-II copolymer 100, Epikote 828 100, and III 50 parts was coated 30  $\mu\text{m}$ -thick on a 50- $\mu\text{m}$  polyimide film, dried 10 min at 120°, laminated with a 35- $\mu\text{m}$  **Cu foil** at 80° and 2 kg/cm<sup>2</sup>, and cured 6 h at 120° to give a laminate having peel strength 1.3 and 1.1 kg/cm at **Cu foil** and polyimide side, resp., good solder heat resistance (10 s at 320°), and solvent (CH<sub>2</sub>Cl<sub>2</sub>) resistance, vs. 1.0, 0.6, bad, and swelled, resp., for an

adhesive containing 5 parts III instead of 100 parts.

IC ICM C09J003-16  
ICS C09J003-14

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(acrylic polymer blends, adhesives, for flexible printed circuit boards)

IT **Adhesives**  
(epoxy-acrylic polymer blends, for flexible printed circuit boards)

IT **Electric circuits**  
(printed, flexible, adhesives for, epoxy-acrylic polymer blends as)

IT 117955-47-2 **117955-48-3** 117969-20-7  
RL: USES (Uses)  
(blends with acrylic polymers, adhesives, for flexible printed circuit boards)

IT **117955-48-3**  
RL: USES (Uses)  
(blends with acrylic polymers, adhesives, for flexible printed circuit boards)

RN 117955-48-3 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and ethenylphenol (9CI) (CA INDEX NAME)

CM 1

CRN 31257-96-2  
CMF C8 H8 O  
CCI IDS

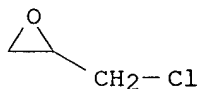


D1-OH

D1-CH=CH<sub>2</sub>

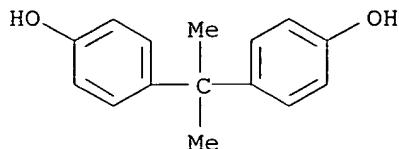
CM 2

CRN 106-89-8  
CMF C3 H5 Cl O



CM 3

CRN 80-05-7  
CMF C15 H16 O2



L43 ANSWER 41 OF 52 HCA COPYRIGHT 2004 ACS on STN  
110:9367 Adhesives for printed circuit board composites. Yamamoto, Tsukasa;  
Kondo, Mitsuhiro (Ibiden Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
63120784 A2 **19880525** Showa, 9 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1986-268356 19861110.

AB Adhesives, especially useful in bonding printed circuit boards with other  
boards, substrates, and/or **Cu foils**, are prepared from  
thermosetting epoxy resins (containing amine, polyamide, and/or imidazole  
hardeners) and thermosetting epoxy methacrylate resins (containing fillers and  
thixotropic substances, with curing temperature higher than that of the epoxy  
resins), with the thixotropic index of the adhesives ( $\eta_1/\eta_{100}$ )  
being 10-60 ( $\eta_1$  and  $\eta_{100}$  = viscosity at sliding speed 1/s and  
100/s, resp.). A mixture of Epikote E-1001 200, Laromin C-260 25, bisphenol  
A epoxy methacrylate resin (Neopol 8104) 100, diallyl phthalate 75, silica  
8.3, and Percumyl D 1.8 parts was screen printed on a printed circuit  
board, bonded with a substrate, and heated to cure to give a composite  
having good heat, moisture, and chemical resistances.

IC ICM C09J003-16  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76

IT **Epoxy resins, uses and miscellaneous**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, thermosetting, for printed circuit boards)

IT **Adhesives**  
(epoxy resin-based, thermosetting, for printed circuit boards)

IT **Electric circuits**  
(printed, adhesives for, thermosetting epoxy resin-epoxy methacrylate  
resin blends as)

IT **117912-57-9 117914-35-9**, Epikote E1001-Laromin  
C260-Neopol 8104-NK Ester TMPT copolymer  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, thermosetting, for printed circuit boards)

IT **117912-57-9 117914-35-9**, Epikote E1001-Laromin  
C260-Neopol 8104-NK Ester TMPT copolymer  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, thermosetting, for printed circuit boards)

RN 117912-57-9 HCA  
CN 1,2-Benzenedicarboxylic acid, diethenyl ester, polymer with  
(chloromethyl)oxirane, 4,4'-methylenebis[2-methylcyclohexanamine],  
4,4'-(1-methylethylidene)bis[phenol] and Neopol 8104 (9CI) (CA INDEX  
NAME)

CM 1

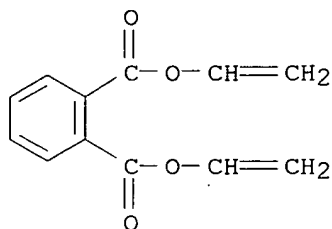
CRN 84683-18-1  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 46492-29-9

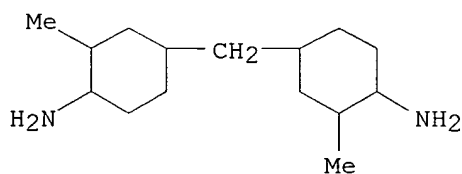
CMF C12 H10 O4



CM 3

CRN 6864-37-5

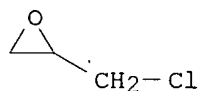
CMF C15 H30 N2



CM 4

CRN 106-89-8

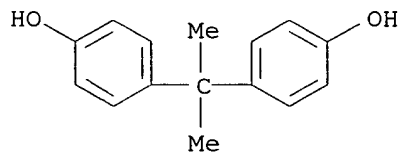
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



RN 117914-35-9 HCA

CN 2-Propenoic acid, 2-methyl-, 2-ethyl-2-[[2-methyl-1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with

(chloromethyl)oxirane, 4,4'-methylenebis[2-methylcyclohexanamine],  
4,4'-(1-methylethylidene)bis[phenol] and Neopol 8104 (9CI) (CA INDEX  
NAME)

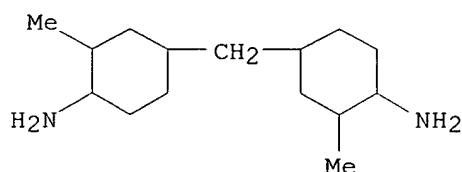
CM 1

CRN 84683-18-1  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

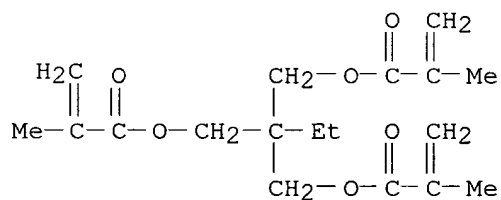
CM 2

CRN 6864-37-5  
CMF C15 H30 N2



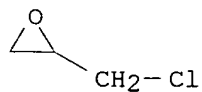
CM 3

CRN 3290-92-4  
CMF C18 H26 O6



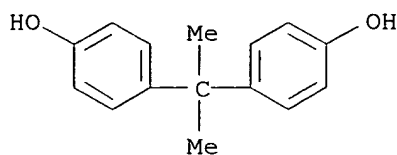
CM 4

CRN 106-89-8  
CMF C3 H5 Cl O



CM 5

CRN 80-05-7  
CMF C15 H16 O2



- L43 ANSWER 42 OF 52 HCA COPYRIGHT 2004 ACS on STN  
 109:232372 Heat- and solvent-resistant epoxy resin adhesives for flexible printed circuit boards. Nishikawa, Junichiro; Yamanochi, Shosuke (Sumitomo Electric Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63030534 A2 **19880209** Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-173234 19860722.
- AB The title adhesives having good adhesion to polyimide films comprise 100 parts epoxy resins and 10-50 parts hardeners comprising diaminodiphenylmethane (I) and dicyandiamide (II). Thus, Epikote 828 (bisphenol A epoxy resin) 100, I 20, and II 5 parts were dissolved in DMF to give a 80% (solids) adhesive solution, which was applied (30  $\mu$ m thickness) to a polyimide film (50  $\mu$ m thick), dried for 10 min at 120°, hot pressed together with a **Cu foil**, and cured 6 h at 120° to give a flexible laminate. The laminate had excellent solvent and heat resistance and showed strength of bonding to the polyimide film 1.2 kg/cm, vs. 0.6 using no II.
- IC ICM C08J003-16  
 ICA C08L063-00  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 76
- ST adhesive epoxy printed circuit board; heat solvent resistance adhesive epoxy; diaminodiphenylmethane dicyandiamide epoxy resin hardener; flexible **copper** polyimide film laminate
- IT **Epoxy resins, uses and miscellaneous**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, with improved solvent and heat resistance, for flexible printed circuit boards)
- IT **Epoxy resins, uses and miscellaneous**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (bisphenol A-based, adhesives, with improved solvent and heat resistance, for flexible printed circuit boards)
- IT **Adhesives**  
 (heat- and solvent-resistant, epoxy resins, for flexible printed circuit boards, with high strength of bonding to polyimides)
- IT **Electric circuits**  
 (printed, boards, flexible, adhesives for, epoxy resins as, with improved solvent and heat resistance and adhesion to polyimides)
- IT **117674-39-2**, Diaminodiphenylmethane-dicyandiamide-Epikote 828 copolymer  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, with improved solvent and heat resistance, for flexible printed circuit boards)
- IT 7440-50-8, **Copper**, uses and miscellaneous  
 RL: USES (Uses)  
 (laminates with polyimide films, for flexible printed circuit boards, epoxy resin adhesives for)
- IT **117674-39-2**, Diaminodiphenylmethane-dicyandiamide-Epikote 828 copolymer  
 RL: TEM (Technical or engineered material use); USES (Uses)



(adhesives, with improved solvent and heat resistance, for flexible printed circuit boards)

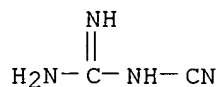
RN 117674-39-2 HCA

CN Guanidine, cyano-, polymer with (chloromethyl)oxirane, 4,4'-methylenebis[benzenamine] and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 461-58-5

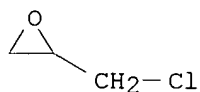
CMF C2 H4 N4



CM 2

CRN 106-89-8

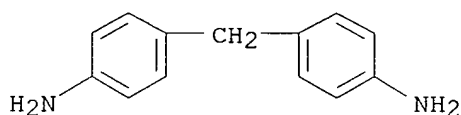
CMF C3 H5 Cl O



CM 3

CRN 101-77-9

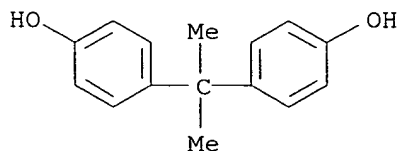
CMF C13 H14 N2



CM 4

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 43 OF 52 HCA COPYRIGHT 2004 ACS on STN

109:212089 Flexible urethane polymer overlay films. Takiguchi, Ryohei; Goto, Takakazu (Dai Nippon Printing Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho

JP 63114642 A2 **19880519** Showa, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-261420 19861031.

AB Dielec. films, useful for printed elec. circuits, are prepared by impregnating films with urethane polymers and coating with thermocurable adhesives onto  $\geq 1$  side. Aramid paper was impregnated with 70% Placel 203AL-isophorone diisocyanate-2-hydroxyethyl acrylate-Kayarad HX 220 copolymer solution at 100 g/m<sup>2</sup> and cured by a 3-megarad dose of an electron beam. The paper was coated at 20 g/m<sup>2</sup> with a 50% solution of xylylene diisocyanate-polyethylene glycol-polypropylene glycol-Epikote 834-2-(butylcarbamoyloxyethyl) acrylate-diaminodiphenylmethane copolymer adhesive in MEK, irradiated to 5 megarads with an electron beam, and laminated with **Cu foil** at 180° and 30 kg/cm<sup>2</sup> for 1 h to give a sample having **Cu** peel strength (90°) 2000 g/cm, folding endurance 500 cycles, and solder resistance 260° for 30 s.

IC ICM B32B027-04

ICS B32B027-40; C09J007-02

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76

IT **Adhesives**

(urethane-acrylate-epoxy polymer, for urethane-impregnated sheets and **copper foil**, for flexible elec. circuit boards)

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)

(acrylic-polyurethane-, adhesives, for urethane-impregnated aramid paper, in manufacture of flexible printed circuits)

IT **Electric circuits**

(printed, boards, manufacture of flexible, from polyurethane-impregnated sheets and acrylate-epoxy-urethane adhesives)

IT **117647-72-0 117647-83-3 117647-84-4**  
**117647-85-5**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for urethane-impregnated aramid paper, in manufacture of flexible printed circuits)

IT **117647-72-0 117647-83-3 117647-84-4**  
**117647-85-5**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for urethane-impregnated aramid paper, in manufacture of flexible printed circuits)

RN 117647-72-0 HCA

CN 2-Propenoic acid, 2-hydroxyethyl ester, polymer with bis(isocyanatomethyl)benzene, (chloromethyl)oxirane, cyanoguanidine, 2-hydroxy-3-phenoxypropyl 2-propenoate, 4,4'-(1-methylethylidene)bis[phenol] and Placel 205AL (9CI) (CA INDEX NAME)

CM 1

CRN 106282-86-4

CMF Unspecified

CCI PMS, MAN

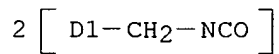
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 25854-16-4

CMF C10 H8 N2 O2

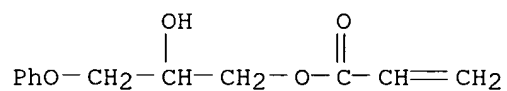
CCI IDS



CM 3

CRN 16969-10-1

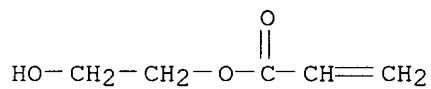
CMF C12 H14 O4



CM 4

CRN 818-61-1

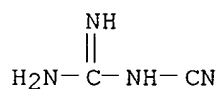
CMF C5 H8 O3



CM 5

CRN 461-58-5

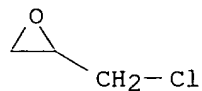
CMF C2 H4 N4



CM 6

CRN 106-89-8

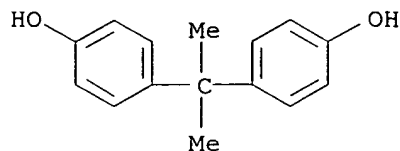
CMF C3 H5 Cl O



CM 7

CRN 80-05-7

CMF C15 H16 O2



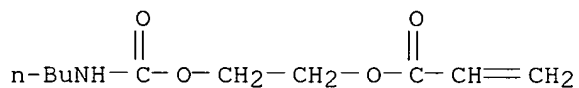
RN 117647-83-3 HCA

CN 2-Propenoic acid, 2-[[[(butylamino)carbonyl]oxy]ethyl ester, polymer with bis(isocyanatomethyl)benzene, (chloromethyl)oxirane,  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl),  $\alpha$ -hydro- $\omega$ -hydroxypoly[oxy(methyl-1,2-ethanediyl)], 4,4'-methylenebis[benzenamine] and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 63225-53-6

CMF C10 H17 N O4

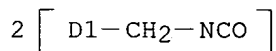


CM 2

CRN 25854-16-4

CMF C10 H8 N2 O2

CCI IDS

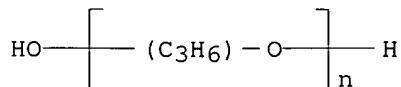


CM 3

CRN 25322-69-4

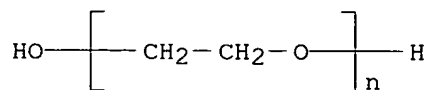
CMF (C3 H6 O)<sub>n</sub> H2 O

CCI IDS, PMS



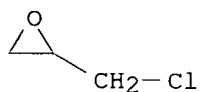
CM 4

CRN 25322-68-3  
 CMF (C2 H4 O)<sub>n</sub> H2 O  
 CCI PMS



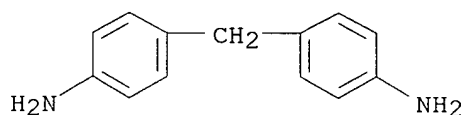
CM 5

CRN 106-89-8  
 CMF C3 H5 Cl O



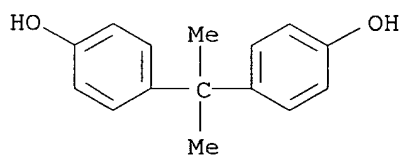
CM 6

CRN 101-77-9  
 CMF C13 H14 N2



CM 7

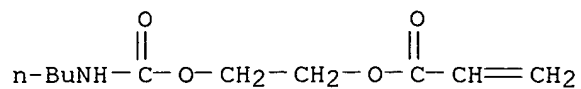
CRN 80-05-7  
 CMF C15 H16 O2



RN 117647-84-4 HCA  
 CN 2-Propenoic acid, 2-[[[(butylamino)carbonyl]oxy]ethyl ester, polymer with bis(isocyanatomethyl)benzene, (chloromethyl)oxirane, α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)], 2-hydroxyethyl 2-propenoate, 4,4'-methylenebis[benzenamine] and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 63225-53-6  
 CMF C10 H17 N O4

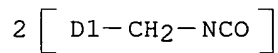


CM 2

CRN 25854-16-4

CMF C10 H8 N2 O2

CCI IDS

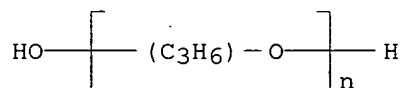


CM 3

CRN 25322-69-4

CMF (C3 H6 O)<sub>n</sub> H2 O

CCI IDS, PMS

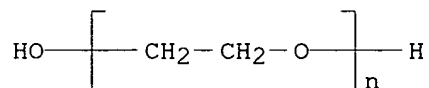


CM 4

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

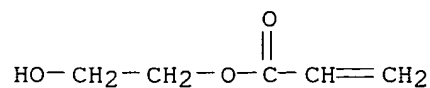
CCI PMS



CM 5

CRN 818-61-1

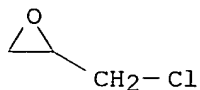
CMF C5 H8 O3



CM 6

CRN 106-89-8

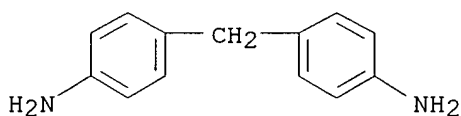
CMF C3 H5 Cl O



CM 7

CRN 101-77-9

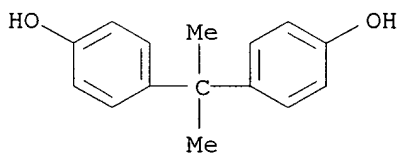
CMF Cl3 H14 N2



CM 8

CRN 80-05-7

CMF Cl5 H16 O2



RN 117647-85-5 HCA

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with  
 1,3-benzenediamine, bis(isocyanatomethyl)benzene, (chloromethyl)oxirane,  
 $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl),  
 2-hydroxy-3-phenoxypropyl 2-propenoate, 4,4'-(1-methylethylidene)bis[phenol] and oxybis[propanediol]  
 tetrakis(oxiranylmethyl) ether (9CI) (CA INDEX NAME)

CM 1

CRN 25854-16-4

CMF Cl0 H8 N2 O2

CCI IDS

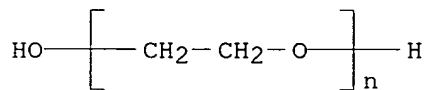

 $2 \left[ \text{D1}-\text{CH}_2-\text{NCO} \right]$

CM 2

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

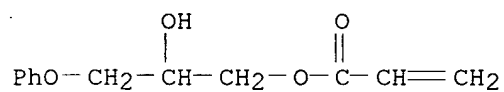
CCI PMS



CM 3

CRN 16969-10-1

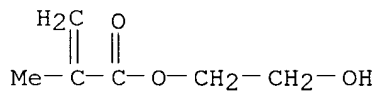
CMF C12 H14 O4



CM 4

CRN 868-77-9

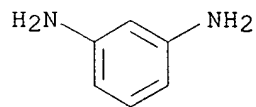
CMF C6 H10 O3



CM 5

CRN 108-45-2

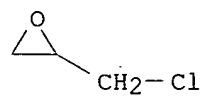
CMF C6 H8 N2



CM 6

CRN 106-89-8

CMF C3 H5 Cl O

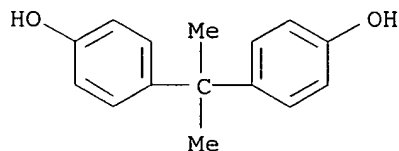




CM 7

CRN 80-05-7

CMF C15 H16 O2



CM 8

CRN 77495-98-8

CMF C18 H30 O9

CCI IDS

CM 9

CRN 59113-36-9

CMF C6 H14 O5

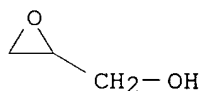
CCI IDS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 10

CRN 556-52-5

CMF C3 H6 O2



L43 ANSWER 44 OF 52 HCA COPYRIGHT 2004 ACS on STN

108:168797 Polyether-polysulfone flexible printed circuit substrates. Sakata, Kenji; Sano, Seiichi; Tsutsumi, Toshihiko (Mitsui Toatsu Chemicals, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 62242529 A2 **19871023** Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-85067 19860415.

AB The title substrates of polyether-polysulfone films and metal foils with good adhesion and heat resistance are prepared with adhesive layers comprising epoxy resin (number-average mol. weight 1500-4000; containing  $\geq 2$  epoxy

groups) 100, epoxy resin containing  $\geq 3$  epoxy groups 25-75, and carboxy-terminated nitrile-diene rubber (containing 15-35% acrylonitrile). 75-130 parts as well as active H-containing latent hardeners [epoxy/(CO<sub>2</sub>H + active H) equivalent ratio 1:0.5-1]. Thus, Epikote 1007 varnish (solids content 50%) 200, tetraglycidylidiaminodiphenylmethane 50, Hycar CTBN 1300 + 13 100, and dicyandiamide (I) 7.9 parts were mixed to give an adhesive, which was applied on polyether-polysulfone film, dried, laminated with Cu foil to give a flexible substrate having good solder-heat resistance (20 s at 230°) bending resistance > 3000 times, and peel strength 1.4 kg/cm, vs. good, <100, and 1.5, resp., for an adhesive containing Epikote 1001 instead of Epikote 1007

and containing 14.5 parts I.

IC ICM B32B015-08  
ICS H05K003-38

ICA B32B007-12; C08G059-18

CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 39, 76

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(carboxy-terminated nitrile rubber- and dicyandiamide-crosslinked, adhesives for flexible polysulfone-**copper foil** laminates for printed circuit substrates)

IT **Adhesives**  
(dicyandiamide- and carboxy-terminated nitrile rubber-crosslinked epoxy resins, for lamination of polyether-polysulfone and metal foils for flexible circuit boards)

IT Polysulfones, uses and miscellaneous  
RL: USES (Uses)  
(polyether-, **copper foil** laminates, epoxy adhesives for, for bending- and heat-resistant circuit boards)

IT Polyethers, uses and miscellaneous  
RL: USES (Uses)  
(polysulfone-, **copper foil** laminates, epoxy adhesives for, for bending- and heat-resistant circuit boards)

IT **Electric circuits**  
(printed, flexible, **copper foil**-polysulfone laminates, adhesives for, carboxylated nitrile rubber-cured epoxy resin as, bending- and heat-resistant)

IT **98038-08-5**  
RL: USES (Uses)  
(carboxylated nitrile rubber- and dicyandiamide-crosslinked, adhesives, polyester-polysulfone and metal foil laminated by, for flexible printed circuit boards)

IT **64020-74-2**  
RL: USES (Uses)  
(carboxylated nitrile rubber- and dicyandiamide-crosslinked, adhesives, polyester-polysulfone and metal foil laminated by, for flexible printed circuit boards)

IT **98038-08-5**  
RL: USES (Uses)  
(carboxylated nitrile rubber- and dicyandiamide-crosslinked, adhesives, polyester-polysulfone and metal foil laminated by, for flexible printed circuit boards)

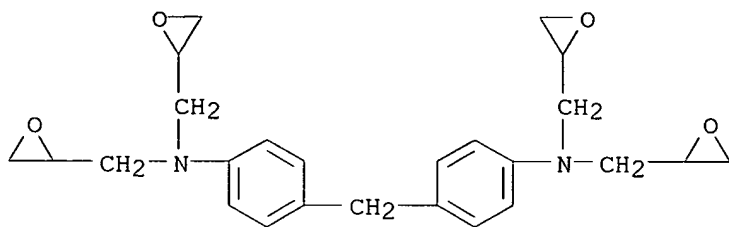
RN 98038-08-5 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and N,N'-(methylenedi-4,1-phenylene)bis[N-(oxiranylmethyl)oxiranemethanamine] (9CI) (CA INDEX NAME)

CM 1

CRN 28768-32-3

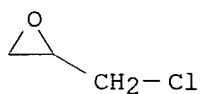
CMF C25 H30 N2 O4



CM 2

CRN 106-89-8

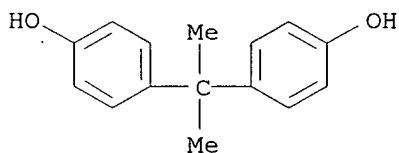
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



IT 64020-74-2

RL: USES (Uses)

(carboxylated nitrile rubber- and dicyandiamide-crosslinked, adhesives, polyester-polysulfone and metal foil laminated by, for flexible printed circuit boards)

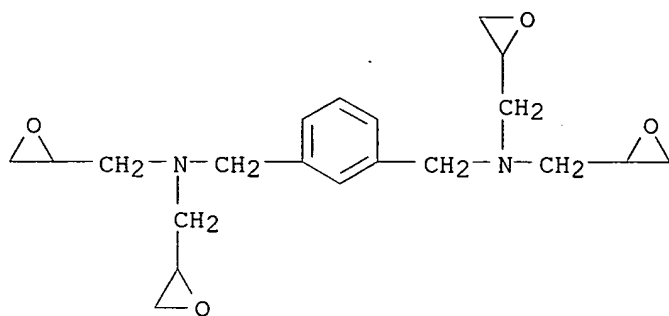
RN 64020-74-2 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane and N,N,N',N'-tetrakis(oxiranylmethyl)-1,3-benzenedimethanamine (9CI) (CA INDEX NAME)

CM 1

CRN 63738-22-7

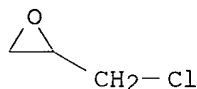
CMF C20 H28 N2 O4



CM 2

CRN 106-89-8

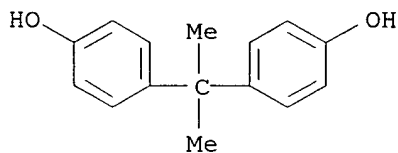
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



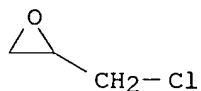
L43 ANSWER 45 OF 52 HCA COPYRIGHT 2004 ACS on STN

108:39284 Manufacture of flexible printed circuit boards by using heat-curable epoxy resins as interlayer adhesives. Nishikawa, Junichiro (Sumitomo Electric Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62199627 A2 **19870903** Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-40754 19860226.

AB Adhesive compns. containing epoxy resins 70-100, aromatic amines 10-20, carboxy-terminated acrylonitrile copolymers 30-40, and tertiary amines or imidazole compds. 0.2-1 part are curable by heat and are useful for manufacture of flexible printed circuit boards with high layer bond strength and improved heat resistance. Thus, Epikote 1001 40, Epikote 154 30, diaminodiphenyl sulfone 15, Nipol 1072B (I; carboxy-terminated nitrile rubber) 30, 2,4,6-tris(dimethylaminomethyl)phenol 0.6, and MEK 300 parts were mixed. A 25- $\mu$ -thick poly(ethylene terephthalate) release film was coated with this composition to coating thickness 100  $\mu$ , heated 10-30 min at 120°, laminated with 25- $\mu$  Kapton film, and pressed together with Cu cladding at 180° to give a heat-resistant flexible printed circuit board with layer bond strength 1.6 kg/cm, vs. 0.8 kg/cm using Nipol 1042 instead of I.

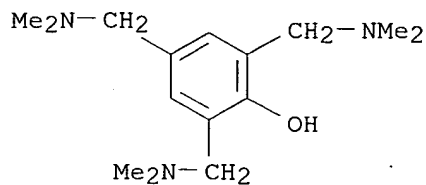
IC ICM C08J005-12  
ICS B29C065-48; H05K003-38  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 76  
IT **Epoxy resins, uses and miscellaneous**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat-resistant, for lamination of plastic **film**  
with **copper** cladding, for flexible printed circuit boards)  
IT Polyimides, uses and miscellaneous  
RL: USES (Uses)  
(lamination with **copper** cladding, by epoxy resin adhesives,  
for flexible printed circuit boards, with improved heat resistance and  
bonding strength)  
IT **Adhesives**  
(heat-resistant, epoxy resins containing carboxy-terminated nitrile rubber  
as, for manufacture of flexible printed circuit boards)  
IT **Electric circuits**  
(printed, boards, flexible, adhesives for, epoxy resins containing  
carboxy-terminated nitrile rubber as)  
IT **112454-09-8 112454-10-1**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat-resistant, for lamination of plastic **film**  
with **copper** cladding, for flexible printed circuit boards)  
IT 25036-53-7, Kapton 25038-59-9, Poly(ethylene terephthalate), uses and  
miscellaneous  
RL: USES (Uses)  
(lamination with **copper** cladding, by epoxy resin adhesives,  
for flexible printed circuit boards, with improved heat resistance and  
bonding strength)  
IT **112454-09-8 112454-10-1**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat-resistant, for lamination of plastic **film**  
with **copper** cladding, for flexible printed circuit boards)  
RN 112454-09-8 HCA  
CN Phenol, 2,4,6-tris[(dimethylamino)methyl]-, polymer with  
(chloromethyl)oxirane, Epikote 154, 4,4'-(1-methylethylidene)bis[phenol]  
and 4,4'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 63939-13-9  
CMF Unspecified  
CCI PMS, MAN  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 106-89-8  
CMF C3 H5 Cl O

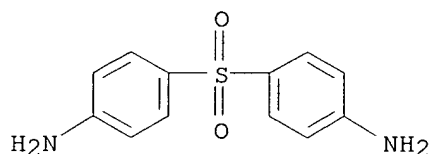
CM 3

CRN 90-72-2  
CMF C15 H27 N3 O



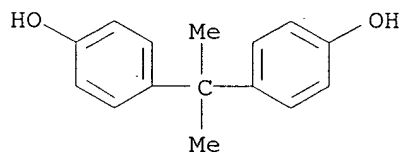
CM 4

CRN 80-08-0  
CMF C12 H12 N2 O2 S



CM 5

CRN 80-05-7  
CMF C15 H16 O2



RN 112454-10-1 HCA  
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, Epikote 154, 2-ethyl-4-methyl-1H-imidazole and 4,4'-sulfonylbis[benzenamine] (9CI) (CA INDEX NAME)

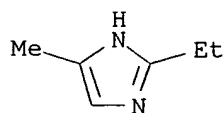
CM 1

CRN 63939-13-9  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

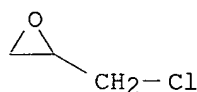
CRN 931-36-2  
CMF C6 H10 N2



CM 3

CRN 106-89-8

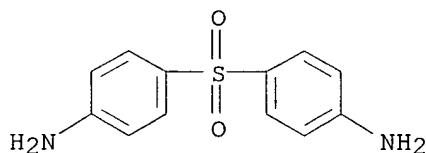
CMF C3 H5 Cl O



CM 4

CRN 80-08-0

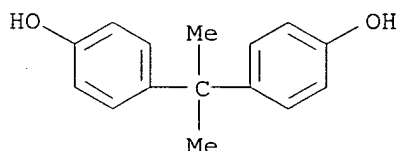
CMF C12 H12 N2 O2 S



CM 5

CRN 80-05-7

CMF C15 H16 O2



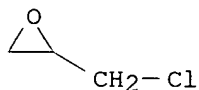
L43 ANSWER 46 OF 52 HCA COPYRIGHT 2004 ACS on STN

107:155940 Adhesive sheets. Okuno, Koichi; Kamio, Kunimasa (Sumitomo Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62146974 A2 **19870630** Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-288254 19851220.

AB Adhesive sheets with excellent adhesion, storage stability, and heat and moisture resistance are prepared from compns. containing epoxy resins of epoxy equivalent weight 100-2500, mono- and/or dinuclear dihydric phenols, and optionally carboxy- or amino-terminated polybutadiene or butadiene-acrylonitrile copolymers. Thus, a mixture of Sumiepoxy ELA 128 (epoxy equivalent weight 187) 100, bisphenol A 61, 2-ethyl-4-methylimidazole 1, and MIBK 243 parts was heated 3 h at 115-120°, applied to release

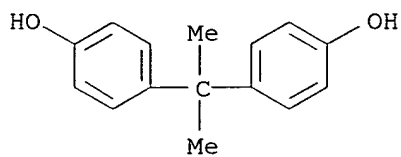
paper, dried 10 min at 105°, and peeled off to give a 30-μ adhesive film. The film was pressed between a 30-μ Kapton (polyimide) film and a 35-μ Cu foil at 180° and 50 kg/cm<sup>2</sup> for 30 min to give a flexible printed circuit board laminate that showed adhesion 2.2 kg/cm, and excellent heat and solvent resistance. A laminate prepared similarly using an adhesive film stored at 40° for 1 mo showed adhesion 2.0 kg/cm.

- IC ICM C09J003-16  
ICS C09J007-00
- CC 38-3 (Plastics Fabrication and Uses)
- IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(adhesive sheets, containing dihydric phenols, storage-stable, heat- and solvent-resistant)
- IT Polyimides, uses and miscellaneous  
RL: USES (Uses)  
(films, copper foil laminates, for printed circuits, epoxy resin adhesives for)
- IT **Adhesives**  
(heat-resistant, hot-melt, sheets of epoxy resins containing dihydric phenols, storage-stable)
- IT **Electric circuits**  
(printed, boards, flexible, epoxy resin adhesive sheets for, storage-stable, heat-resistant)
- IT **26265-08-7 30939-39-0**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat- and chemical resistant, for flexible printed circuit boards)
- IT 25036-53-7  
RL: USES (Uses)  
(films, copper foil laminates, for printed circuits, epoxy resin adhesives for)
- IT **26265-08-7 30939-39-0**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, heat- and chemical resistant, for flexible printed circuit boards)
- RN 26265-08-7 HCA
- CN Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)
- CM 1
- CRN 106-89-8
- CMF C3 H5 Cl O



- CM 2
- CRN 80-05-7
- CMF C15 H16 O2

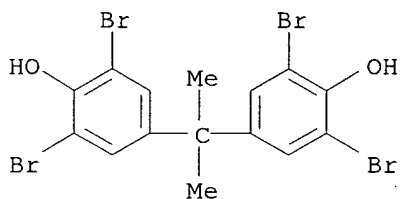




CM 3

CRN 79-94-7

CMF C15 H12 Br4 O2



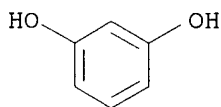
RN 30939-39-0 HCA

CN 1,3-Benzenediol, polymer with (chloromethyl)oxirane and  
4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 108-46-3

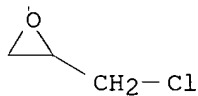
CMF C6 H6 O2



CM 2

CRN 106-89-8

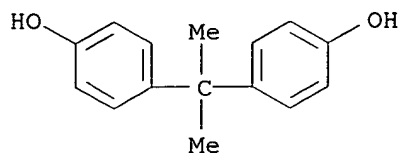
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 47 OF 52 HCA COPYRIGHT 2004 ACS on STN

107:97833 Glass fiber-reinforced electrical laminates by continuous process. Fushiki, Yasuo; Isshiki, Minoru; Nakano, Horoshi; Oizumi, Masyuki; Shimomura, Masayoshi; Imajo, Keiji (Kanegafuchi Chemical Industry Co., Ltd., Japan). Eur. Pat. Appl. EP 217311 A2 **19870408**, 52 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1986-113290 19860926. PRIORITY: JP 1985-215998 19850927; JP 1985-230869 19851015; JP 1985-230870 19851015; JP 1986-113211 19860516; JP 1986-113212 19860516.

AB Elec. laminates with high dimensional stability, through-hole reliability, and mech. strength contain glass-fiber-type substrates impregnated with a halogenated bisphenol-type unsatd. polyester and an epoxy acrylate resin optionally halogenated and **Cu foils** bonded to the impregnated substrates with epoxy resins. In some cases the resin composition contains carboxy-terminated liquid butadiene rubber. Thus, substrates composed of glass fabric on both sides of a glass paper sheet are continuously impregnated with a composition containing 30% 1:1:2:1:1 ethylene glycol-isophthalic acid-maleic anhydride-neopentyl glycol-tetrabromobisphenol A bis(2-hydroxyethyl) ether copolymer-styrene solution 70, Ripoxy R-806 (I, 45% bisphenol A-based epoxy resin acrylate-styrene solution) 30, Sb203 3, and Bz202 1 part, and laminates comprising 5 such impregnated substrates and a 35- $\mu$ m-thick **Cu foil** coated with a 30- $\mu$ m layer of epoxy adhesive on 1 side of the laminate was cured 20 min each at 100 and 160° to give a product with UL-94 fire retardancy V-0, bending strength retention 97% (after aging 1000 h at 170°), water absorption 0.09% (JIS C 6481-5.14) and interlayer peel strength 2.0 kg/cm, compared with V-0, 95, 0.17, and 1.4, resp., for a similar laminate not containing I.

IC ICM H05K001-03

ICS C08J005-24; C08L067-06

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST glass reinforced polyester epoxy acrylate; **copper** glass reinforced elec laminate; continuous prodn glass reinforced laminate; bromobisphenol polyester epoxy acrylate laminate; bisphenol epoxy polyester acrylate laminate; maleate polyester epoxy acrylate laminate; phthalate polyester epoxy acrylate laminate; neopentyl glycol unsatd polyester laminate; ethylene glycol unsatd polyester laminate; styrene crosslinked glass reinforced laminate; adhesive epoxy **copper** laminate

IT **Adhesives**

(epoxy resin, for bonding **copper foils** to glass fiber-reinforced polyester-epoxy resin acrylates)

IT Glass fibers, uses and miscellaneous

RL: USES (Uses)

(polyester-epoxy resin acrylates reinforced by, **copper** elec. laminates, with high dimensional stability and through-hole reliability and mech. strength)

IT Rubber, butadiene, compounds

RL: USES (Uses)  
(carboxy-containing, polyester-epoxy resin acrylates containing, glass fiber-reinforced, **copper** elec. laminates)

IT Polyesters, uses and miscellaneous  
RL: USES (Uses)  
(epoxy, acrylate, glass fiber-reinforced, **copper** elec. laminates, with high dimensional stability and through-hole reliability and mech. strength)

IT **Epoxy resins, uses and miscellaneous**  
RL: USES (Uses)  
(polyester-, acrylate, glass fiber-reinforced, **copper** elec. laminates, with high dimensional stability and through-hole reliability and mech. strength)

IT **Electric circuits**  
(printed, boards, glass fiber-reinforced polyester-epoxy resin acrylates as, with high dimensional stability and through-hole reliability and mech. strength)

IT 7440-50-8, **Copper**, properties  
RL: PRP (Properties)  
(elec. laminates with glass fiber-reinforced polyester-epoxy resin acrylates, with high-dimensional stability and through-hole reliability and mech. strength)

IT **109999-72-6P 109999-73-7P 109999-74-8P**  
RL: PREP (Preparation)  
(manufacture of, as adhesives for bonding **copper foils** to glass fiber-reinforced polyester-epoxy resin acrylates)

IT **109993-62-6P 109993-63-7P**  
RL: PREP (Preparation)  
(manufacture of, as glass fiber-reinforced **copper foil** elec. laminates, with dimensional stability and through-hole reliability and mech. strength)

IT 9003-17-2  
RL: USES (Uses)  
(rubber, carboxy-containing, polyester-epoxy resin acrylates containing, glass fiber-reinforced, **copper** elec. laminates)

IT **109999-72-6P 109999-74-8P**  
RL: PREP (Preparation)  
(manufacture of, as adhesives for bonding **copper foils** to glass fiber-reinforced polyester-epoxy resin acrylates)

RN 109999-72-6 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 5-amino-1,3,3-trimethylcyclohexanemethanamine, (chloromethyl)oxirane and Epiclon EXA 1514 (9CI) (CA INDEX NAME)

CM 1

CRN 103938-75-6

CMF Unspecified

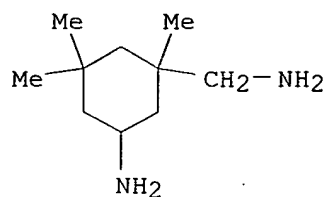
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 2855-13-2

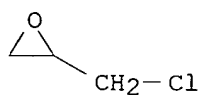
CMF C10 H22 N2



CM 3

CRN 106-89-8

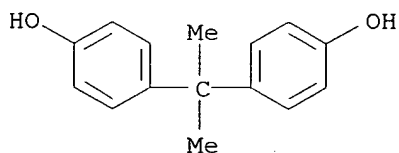
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



RN 109999-74-8 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 5-amino-1,3,3-trimethylcyclohexanemethanamine, (chloromethyl)oxirane, N,N-dimethyl-1,3-propanediamine and Epiclon EXA 1514 (9CI) (CA INDEX NAME)

CM 1

CRN 103938-75-6

CMF Unspecified

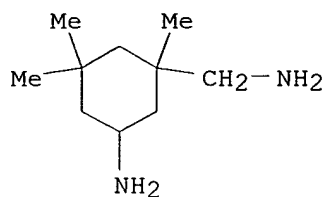
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 2

CRN 2855-13-2

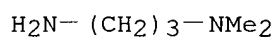
CMF C10 H22 N2



CM 3

CRN 109-55-7

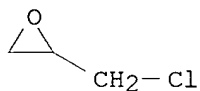
CMF C5 H14 N2



CM 4

CRN 106-89-8

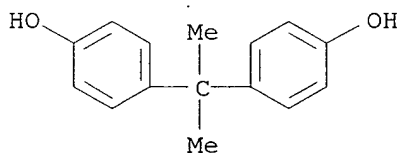
CMF C3 H5 Cl O



CM 5

CRN 80-05-7

CMF C15 H16 O2



IT 109993-62-6P 109993-63-7P

RL: PREP (Preparation)

(manufacture of, as glass fiber-reinforced **copper foil**  
elec. laminates, with dimensional stability and through-hole  
reliability and mech. strength)

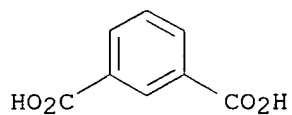
RN 109993-62-6 HCA

CN 1,3-Benzenedicarboxylic acid, polymer with (chloromethyl)oxirane polymer  
with 4,4'-(1-methylethylidene)bis[phenol] 2-propenoate, 1,2-ethanediol,  
ethenylbenzene, 2,5-furandione, 4,4'-(1-methylethylidene)bis[2,6-  
dibromophenol] and oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 121-91-5

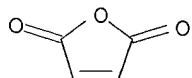
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CM 2

CRN 108-31-6

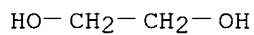
CMF C4 H2 O3



CM 3

CRN 107-21-1

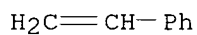
CMF C2 H6 O2



CM 4

CRN 100-42-5

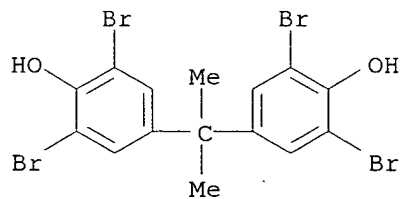
CMF C8 H8



CM 5

CRN 79-94-7

CMF C15 H12 Br4 O2



CM 6

CRN 75-21-8

CMF C2 H4 O



CM 7

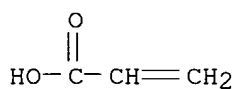
CRN 55818-57-0

CMF (C15 H16 O2 . C3 H5 Cl O)x . x C3 H4 O2

CM 8

CRN 79-10-7

CMF C3 H4 O2



CM 9

CRN 25068-38-6

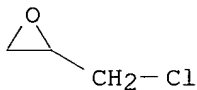
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 10

CRN 106-89-8

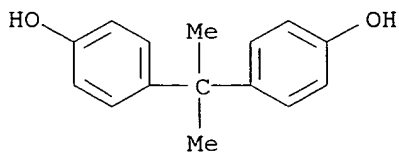
CMF C3 H5 Cl O



CM 11

CRN 80-05-7

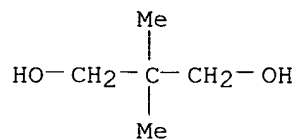
CMF C15 H16 O2



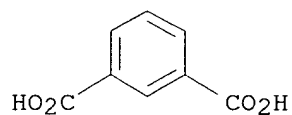
RN 109993-63-7 HCA

CN 1,3-Benzenedicarboxylic acid, polymer with (chloromethyl)oxirane polymer with 4,4'-(1-methylethylidene)bis[phenol] 2-propenoate, 2,2-dimethyl-1,3-propanediol, 1,2-ethanediol, ethenylbenzene, 2,5-furandione, 4,4'-(1-methylethylidene)bis[2,6-dibromophenol] and oxirane (9CI) (CA INDEX NAME)

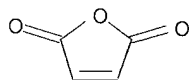
CM 1

CRN 126-30-7  
CMF C5 H12 O2

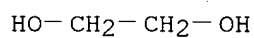
CM 2

CRN 121-91-5  
CMF C8 H6 O4

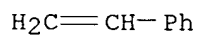
CM 3

CRN 108-31-6  
CMF C4 H2 O3

CM 4

CRN 107-21-1  
CMF C2 H6 O2

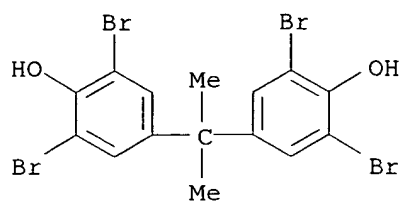
CM 5

CRN 100-42-5  
CMF C8 H8

CM 6

CRN 79-94-7  
CMF C15 H12 Br4 O2





CM 7

CRN 75-21-8

CMF C2 H4 O



CM 8

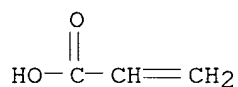
CRN 55818-57-0

CMF (C15 H16 O2 . C3 H5 Cl O)x . x C3 H4 O2

CM 9

CRN 79-10-7

CMF C3 H4 O2



CM 10

CRN 25068-38-6

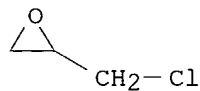
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 11

CRN 106-89-8

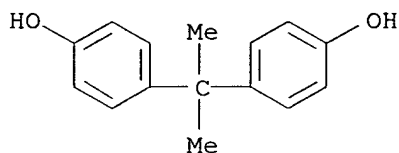
CMF C3 H5 Cl O



CM 12

CRN 80-05-7

CMF C15 H16 O2



L43 ANSWER 48 OF 52 HCA COPYRIGHT 2004 ACS on STN

105:80167 Flexible printed circuit boards. Nishikubo, Tatatomi; Mizuko, Tsutomu; Imaura, Masakazu; Ibuki, Shuji (NOK Corp., Japan). Jpn. Tokkyo Koho JP 60056620 B4 **19851211** Showa, 4 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1975-8163 19750118.

AB Laminated flexible printed circuit boards with improved layer bond strength are prepared by sandwiching irradiation-curable compns. containing the adduct of an epoxy resin prepared by the reaction of a bisphenol with epichlorohydrin or methylepichlorohydrin or an epoxy resin prepared by the epoxidn. of an aliphatic or alicyclic olefin with an  $\alpha,\beta$ -unsatd. carboxylic acid, an irradiation-polymerizable monomer, and a saturated polyester

or a saturated epoxy ester resin between a plastic **film** and **Cu foil** and then curing the composition by irradiation Thus, DER 331J 57, EPU-10 68, acrylic acid 18, adipic acid 18.3, benzyltriethylammonium chloride 2, hydroquinone mono-Me ether 0.2, nonaethylene glycol diacrylate 40, and phthalic anhydride 74 g were mixed 30 min at 80-120° to give a composition (A) with acid value 11.3. A 50- $\mu$  polyester film was coated (5  $\mu$ ) with a mixture containing 100 parts A composition and 2 parts benzoin Et ether and cured 40 s by UV rays by using a 3-kW source at 30 cm to give a flexible laminate with high layer bond strength.

IC ICM B32B015-08

ICS H05K001-03

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST epoxy adhesive printed circuit board; **copper** polyester laminate circuit board; bond strength **copper** polyester laminate; **film** polyester **copper** laminate; crosslinked epoxy **copper** polyester bonding

IT **Epoxy resins, uses and miscellaneous**

RL: USES (Uses)

(crosslinked, adhesives, for bonding of polyester **film** to **copper foil**, for printed circuit boards)

IT **Adhesives**

(epoxy resins, for bonding of polyester **film** to **copper foil**, for flexible printed circuit boards)

IT Polyesters, uses and miscellaneous

RL: USES (Uses)

(films, lamination of, with **copper foil**, for flexible printed circuit boards)

IT Crosslinking

(photochem., of epoxy resins, for bonding of **copper foil** to polyester film)

IT **Electric circuits**

(printed, flexible, laminates of **copper foil** with polyester film as, with increased layer bond strength)

IT 64-19-7D, reaction products with epoxy resin, polymers with terephthalic acid, trimellitic anhydride, triethylene glycol diacrylate and

hydroxypropyl acrylate 65-85-0D, reaction products with epoxy resin, polymers with nonethylene glycol diacrylate, phthalic anhydride and styrene 85-44-9D, polymers with benzoic acid-epoxy resin reaction products, nonaethylene glycol diacrylate and styrene 100-21-0D, polymers with acetic acid-epoxy resin reaction products, trimellitic anhydride, triethylene glycol diacrylate and hydroxypropyl acrylate 552-30-7D, polymers with acetic acid-epoxy resin reaction products, terephthalic acid, triethylene glycol diacrylate and hydroxypropyl acrylate 999-61-1D, polymers with acetic acid-epoxy resin reaction products, terephthalic acid, trimellitic anhydride and triethylene glycol diacrylate 1680-21-3D, polymers with acetic acid-epoxy resin reaction products, terephthalic acid, trimellitic anhydride and hydroxypropyl acrylate 39362-06-6D, reaction products with benzoic acid, polymers with nonaethylene glycol diacrylate, phthalic anhydride and styrene 85854-64-4D, reaction products with acetic acid, polymers with terephthalic acid, trimellitic anhydride, triethylene glycol diacrylate and hydroxypropyl acrylate 103728-49-0 103728-50-3

103728-51-4

RL: USES (Uses)

(crosslinked, adhesives, for bonding of polyester film to **copper foil**, for printed circuit boards)

IT 25038-59-9 103737-49-1 103737-50-4

RL: USES (Uses)

(epoxy resin adhesives containing, for bonding of polyester film to **copper foil**, for flexible printed circuit boards)

IT 103728-49-0 103728-51-4

RL: USES (Uses)

(crosslinked, adhesives, for bonding of polyester film to **copper foil**, for printed circuit boards)

RN 103728-49-0 HCA

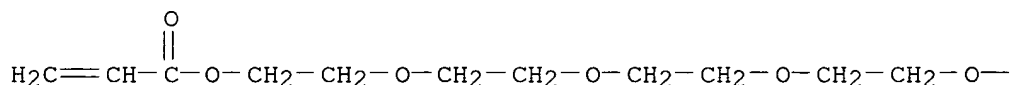
CN 2-Propenoic acid, polymer with (chloromethyl)oxirane, ethenylbenzene, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol] and 3,6,9,12,15,18,21,24-octaoxahexacosane-1,26-diyl di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

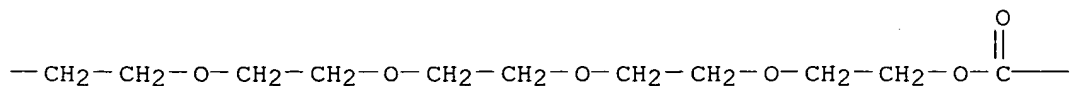
CRN 57491-53-9

CMF C24 H42 O12

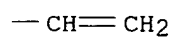
PAGE 1-A



PAGE 1-B



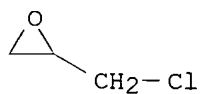
PAGE 1-C



CM 2

CRN 106-89-8

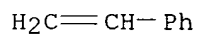
CMF C3 H5 Cl O



CM 3

CRN 100-42-5

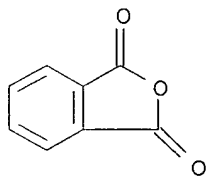
CMF C8 H8



CM 4

CRN 85-44-9

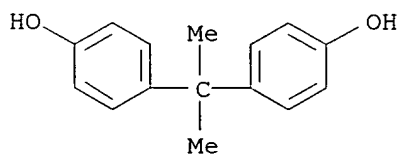
CMF C8 H4 O3



CM 5

CRN 80-05-7

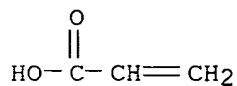
CMF C15 H16 O2



CM 6

CRN 79-10-7

CMF C3 H4 O2



RN 103728-51-4 HCA

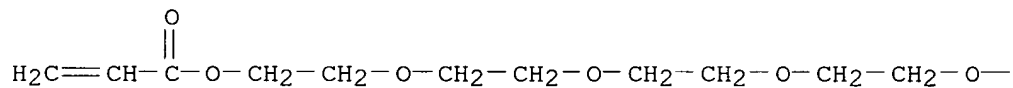
CN Hexanedioic acid, polymer with Adeka EPU 10, (chloromethyl)oxirane, 1,3-isobenzofurandione, 4,4'-(1-methylethylidene)bis[phenol], 3,6,9,12,15,18,21,24-octaohexacosane-1,26-diyl di-2-propenoate and 2-propenoic acid (9CI) (CA INDEX NAME)

CM 1

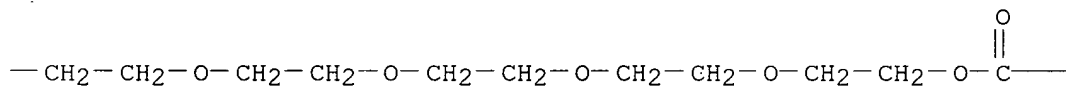
CRN 57491-53-9

CMF C24 H42 O12

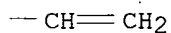
PAGE 1-A



PAGE 1-B



PAGE 1-C



CM 2

CRN 56449-11-7

CMF Unspecified

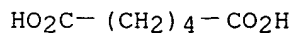
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 3

CRN 124-04-9

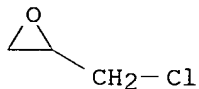
CMF C6 H10 O4



CM 4

CRN 106-89-8

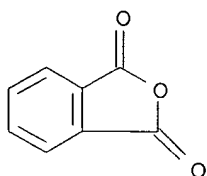
CMF C3 H5 Cl O



CM 5

CRN 85-44-9

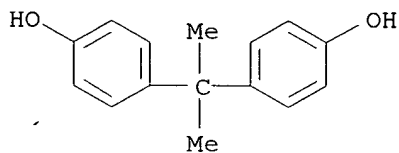
CMF C8 H4 O3



CM 6

CRN 80-05-7

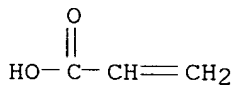
CMF C15 H16 O2



CM 7

CRN 79-10-7

CMF C3 H4 O2



L43 ANSWER 49 OF 52 HCA COPYRIGHT 2004 ACS on STN  
102:186297 Laminates having metal foil layers. (Matsushita Electric Works,  
Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 59232849 A2 **19841227**  
Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-108142  
19830615.

AB Laminates having excellent peeling resistance at high temperature are prepared  
by stacking several substrate strips impregnated with unsatd. resins, placing

a metal foil strip over an adhesive on the substrates, and passing the laminate through a curing furnace continuously at atmospheric pressure, and an adhesive composed of a vinyl ester resin, styrene, a polymerization initiator, and  $\geq 1$  of  $ROZnR$  [ $R = CH_2:CR_1CO_2CH_2CH(OH)CH_2$ ;  $R_1 = H, Me$ ;  $Z = R_1CHCH_2O$ ;  $n = 1-2$ ],  $(ROCH_2)_2CHOR$ , and  $C_6H_4(CO_2R)_2$  is used. The laminates are especially useful as printed circuit boards. Thus, an adhesive of Ripoxy R-802 (vinyl ester resin), tert-Bu peroxybenzoate (I) [614-45-9], styrene, and diethylene glycol diglycidyl ether diacrylate was applied on 3EC-S (electrolytic **Cu foil**) which was then laminated on a stack of 5 sheets of TO-10 kraft paper impregnated with 7122 (unsatd. polyester resin) containing I to give a laminate, which was cured in a 120° drier to give a laminate having **Cu foil** with peeling strength 1.75 kg/cm at standard conditions and 0.42 kg/cm when immersed in 150° oil.

IC ICM B32B015-08

ICS C09J003-16

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST metal foil laminate; printed circuit board; **copper foil**

laminate printed circuit; acrylate adhesive metal laminate

IT **Epoxy resins, uses and miscellaneous**

RL: USES (Uses)

(acrylates, adhesives, for bonding **copper foil** to paper laminates for printed circuit boards)

IT Plastics, laminated

RL: USES (Uses)

(**copper foil**-paper-polyester resin, for printed circuit boards)

IT **Adhesives**

(vinyl esters, for bonding **copper foil** to paper laminates for printed circuit boards)

IT Paper

(laminates, **copper foil**-covered, for printed circuit boards)

IT **Electric circuits**

(printed, boards, **copper foil**-paper laminates, containing polyester impregnants)

IT Polyesters, uses and miscellaneous

RL: USES (Uses)

(unsatd., impregnants, for **copper foil**-paper laminates for printed circuit boards)

IT **96343-72-5 96343-73-6 96343-74-7**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for bonding **copper foil** to paper laminates)

IT 96353-72-9

RL: USES (Uses)

(impregnants, for **copper foil**-paper laminates for printed circuit boards)

IT **96343-72-5 96343-73-6 96343-74-7**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, for bonding **copper foil** to paper laminates)

RN 96343-72-5 HCA

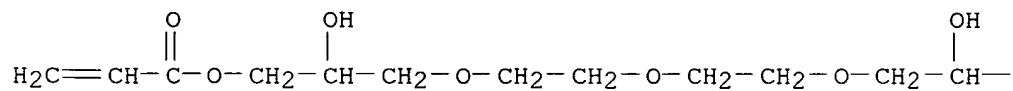
CN 2-Propenoic acid, oxybis[2,1-ethanediylloxy(2-hydroxy-3,1-propanediyl)] ester, polymer with (chloromethyl)oxirane polymer with 4,4'-(1-methylethylidene)bis[phenol] bis(2-methyl-2-propenoate) and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

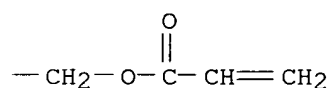
CRN 55252-47-6

CMF C16 H26 O9

PAGE 1-A



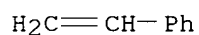
PAGE 1-B



CM 2

CRN 100-42-5

CMF C8 H8



CM 3

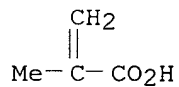
CRN 62395-94-2

CMF (C15 H16 O2 . C3 H5 Cl O)x . 2 C4 H6 O2

CM 4

CRN 79-41-4

CMF C4 H6 O2



CM 5

CRN 25068-38-6

CMF (C15 H16 O2 . C3 H5 Cl O)x

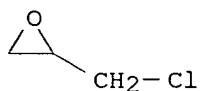
CCI PMS

CM 6

CRN 106-89-8

CMF C3 H5 Cl O

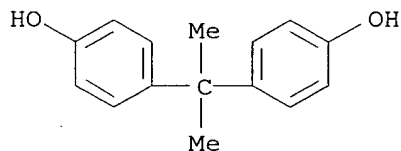




CM 7

CRN 80-05-7

CMF C15 H16 O2



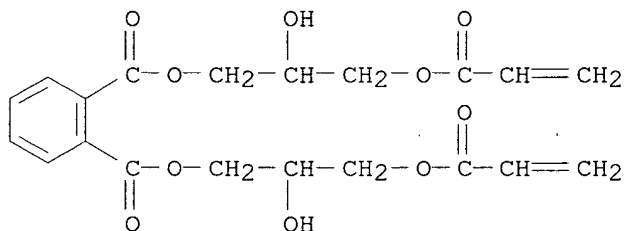
RN 96343-73-6 HCA

CN 1,2-Benzenedicarboxylic acid, bis[2-hydroxy-3-[(1-oxo-2-propenyl)oxylpropyl] ester, polymer with (chloromethyl)oxirane polymer with 4,4'-(1-methylethylidene)bis[phenol] bis(2-methyl-2-propenoate) and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 93402-78-9

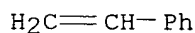
CMF C20 H22 O10



CM 2

CRN 100-42-5

CMF C8 H8



CM 3

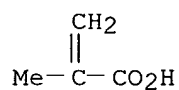
CRN 62395-94-2

CMF (C15 H16 O2 . C3 H5 Cl O)x . 2 C4 H6 O2

CM 4

CRN 79-41-4

CMF C4 H6 O2



CM 5

CRN 25068-38-6

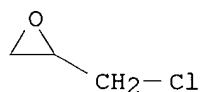
$$\text{CMF} \quad (\text{C}_{15} \text{H}_{16} \text{O}_2 \cdot \text{C}_3 \text{H}_5 \text{ClO})_x$$

CCI      PMS

CM 6

CRN 106-89-8

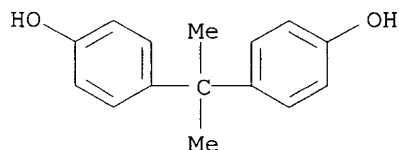
CMF C3 H5 Cl O



CM 7

CRN 80-05-7

CMF C15 H16 O2



RN 96343-74-7 HCA

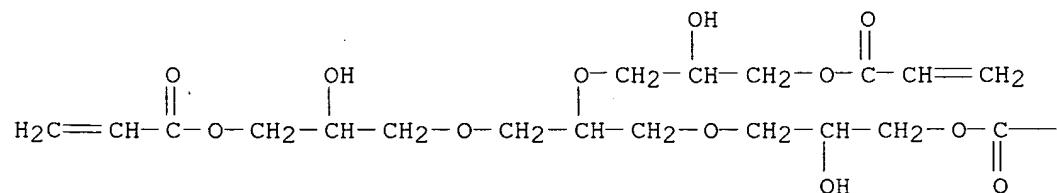
2-Propenoic acid, 1,2,3-propanetriyltris[oxy(2-hydroxy-3,1-propanediyl)]  
ester, polymer with (chloromethyl)oxirane polymer with  
4,4'-(1-methylethylidene)bis[phenol] bis(2-methyl-2-propenoate) and  
ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

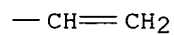
CRN 90802-83-8

CMF C21 H32 O12

PAGE 1-A



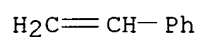
PAGE 1-B



CM 2

CRN 100-42-5

CMF C8 H8



CM 3

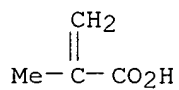
CRN 62395-94-2

CMF (C15 H16 O2 . C3 H5 Cl O)x . 2 C4 H6 O2

CM 4

CRN 79-41-4

CMF C4 H6 O2



CM 5

CRN 25068-38-6

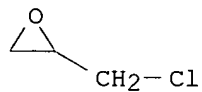
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 6

CRN 106-89-8

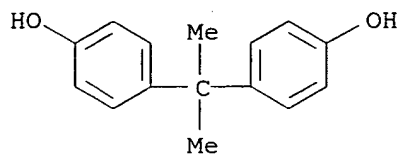
CMF C3 H5 Cl O



CM 7

CRN 80-05-7

CMF C15 H16 O2



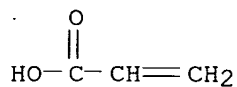
- L43 ANSWER 50 OF 52 HCA COPYRIGHT 2004 ACS on STN  
 99:196220 **Copper foil** laminate. (Matsushita Electric Works, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 58033456 A2  
**19830226** Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-133101 19810824.
- AB **Cu foil** laminates with unsatd. resin-impregnated substrates, showing excellent adhesion at both room and high temps., were prepared using vinyl ester resin adhesives containing both a photoinitiator and a thermal polymerization initiator. Thus, a 35- $\mu$  **Cu foil** was coated 60-70  $\mu$  thick with an adhesive from UE 2083 [85854-52-0] (epoxy vinyl ester) 100, benzoin Me ether 0.5, and tert-Bu perbenzoate 1.0 part, UV-irradiated for semicuring, overlaid on a 5-ply overlay of kraft paper impregnated with FG 104 [71990-53-9] containing 1% Bz2O2, and heated at 120° for 15 min.
- IC B32B015-08  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 76
- ST epoxy ester adhesive **copper** laminate; unsatd polyester **copper foil** laminate; paper **copper foil** laminate
- IT **Adhesives**  
 (epoxy vinyl esters, UV- and heat-cured, for **copper foil** laminates with unsatd. polyester-impregnated paper)
- IT Paper  
 (unsatd. polyester-impregnated, **copper foil** laminates, manufacture of)
- IT **Epoxy resins, uses and miscellaneous**  
 RL: USES (Uses)  
 (vinyl esters, adhesives, UV- and heat-cured, for **copper foil** laminates with unsatd. polyester-impregnated paper)
- IT **Electric circuits**  
 (printed, **copper foil** laminates for)
- IT Polyesters, uses and miscellaneous  
 RL: USES (Uses)  
 (unsatd., paper impregnated with, **copper foil** laminates, adhesives for)
- IT **55818-57-0 62395-94-2** 85854-52-0  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, UV- and heat-cured, for **copper foil** laminates with unsatd. polyester-impregnated paper)
- IT 71990-53-9  
 RL: USES (Uses)  
 (paper impregnated with, **copper foil** laminates, adhesives for)
- IT **55818-57-0 62395-94-2**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (adhesives, UV- and heat-cured, for **copper foil** laminates with unsatd. polyester-impregnated paper)
- RN 55818-57-0 HCA  
 CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane,

2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

CMF C3 H4 O2



CM 2

CRN 25068-38-6

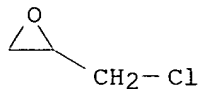
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 3

CRN 106-89-8

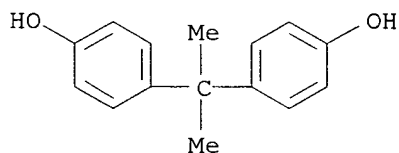
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



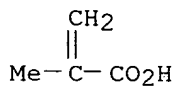
RN 62395-94-2 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, bis(2-methyl-2-propenoate) (9CI) (CA INDEX NAME)

CM 1

CRN 79-41-4

CMF C4 H6 O2

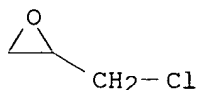


CM 2

CRN 25068-38-6  
 CMF (C15 H16 O2 . C3 H5 Cl O)x  
 CCI PMS

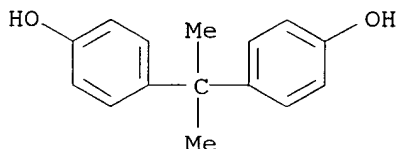
CM 3

CRN 106-89-8  
 CMF C3 H5 Cl O



CM 4

CRN 80-05-7  
 CMF C15 H16 O2



L43 ANSWER 51 OF 52 HCA COPYRIGHT 2004 ACS on STN  
 99:39495 Metal-clad circuit board laminates. (Matsushita Electric Works, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 58011138 A2 19830121 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-109853 19810713.

AB The title laminates have excellent adhesion between the metal foil and laminated substrate at both ambient and elevated temps. They comprise unsatd. polyester prepreg sheets laminated with vinyl ester adhesive-coated metal foils and cured by heating without compression, in which the adhesive is either filled with 5-25% Me silicate condensates, blended with 1-10% noncryst. saturated polyester having glass transition temperature

≤70°, or dried before lamination to form a film, ≥30-μ thick, comprising a ≥1-μ cured layer next to the foil and a ≥10-μ uncured layer facing the prepregs. Thus, 5 kraft paper sheets impregnated with a maleic anhydride-phthalic anhydride-propylene glycol copolymer [25037-66-5] varnish containing 35% styrene and 1% Bz2O2 were laminated with Cu foil sheets coated with a 70-μ layer of R-806 adhesive containing MSP-S Me silicate condensate and 1% Bz2O2, then cured 10 min at 100° and 10 min at 160° to obtain a laminate having peel strength 1.72 kg/cm at ambient temperature and 0.45 kg/cm at 150°.

IC B32B015-08; B32B031-12  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 76

IT **Adhesives**

(vinyl ester polymers, metal-clad circuit boards bonded by)

IT **Epoxy resins, uses and miscellaneous**

RL: TEM (Technical or engineered material use); USES (Uses)  
 (acrylate-terminated, adhesives, for bonding metal foil to circuit

boards)

IT **Electric circuits**

(printed, boards, metal foil-clad polyester prepreg laminates with vinyl ester polymer adhesives)

IT **55818-57-0**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, with Me silicate condensate fillers, for bonding metal foil to circuit boards)

IT **55818-57-0**

RL: TEM (Technical or engineered material use); USES (Uses)

(adhesives, with Me silicate condensate fillers, for bonding metal foil to circuit boards)

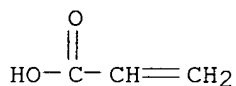
RN 55818-57-0 HCA

CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

CMF C3 H4 O2



CM 2

CRN 25068-38-6

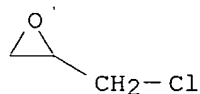
CMF (C15 H16 O2 . C3 H5 Cl O)x

CCI PMS

CM 3

CRN 106-89-8

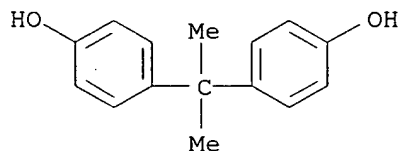
CMF C3 H5 Cl O



CM 4

CRN 80-05-7

CMF C15 H16 O2



- 98:180700 Printed circuit boards. (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 57186385 A2 19821116 Showa, 6 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1981-70675 19810513.
- AB poly(p-phenylene sulfide) (I) [25212-74-2] films are treated with corona discharge or low-temperature plasma and laminated with metals with adhesives cured at <120° to prepare flexible printed circuit boards. Thus, a drawn I film was treated with corona discharge, coated with a 40% DMF varnish containing Versalon 1165 60, Epikote 834 30, Epikote 872 8, and imidazole 2%, dried 2 min at 110° and 1 min at 140°, laminated with a **Cu foil** at 120° (3 kg/cm) for 1 s, and kept 2 days in N at 80° to prepare a laminate having peeling strength >1.5 kg/cm, good chemical resistance, good solder heat resistance, and warp <10 mm, compared with <0.5, swelling, swelling, and <10, resp., for a board prepared without the corona discharge treatment.
- IC H05K001-03
- CC 38-3 (Plastics Fabrication and Uses)
- ST polythiophenylene printed circuit board; **copper** polythiophenylene adhesion; polyamide epoxy resin adhesive; elec corona discharge polythiophenylene; plasma treatment polythiophenylene
- IT Polythiophenylenes  
RL: PRP (Properties)  
(adhesion of, to **copper foils**, for printed circuit boards, adhesives for)
- IT Polyamides, uses and miscellaneous  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing epoxy resins, for bonding **copper foils** to polythiophenylenes)
- IT **Epoxy resins, uses and miscellaneous**  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, containing polyamides, for bonding **copper foils** to polythiophenylenes)
- IT Plasma, chemical and physical effects  
(argon, for treatment of polythiophenylenes, for adhesion to **copper foils**)
- IT Fatty acids, polymers  
RL: USES (Uses)  
(dimers, glycidyl esters, adhesives, containing novolak epoxy resins and polyamides, for bonding **copper foils** to polythiophenylenes)
- IT **Adhesives**  
(epoxy resins, containing polyamides, for bonding **copper foils** to polythiophenylenes)
- IT Electric corona  
(polythiophenylenes treated with, for adhesion to **copper foils**, for printed circuit boards)
- IT Phenolic resins, uses and miscellaneous  
RL: TEM (Technical or engineered material use); USES (Uses)  
(epoxy, adhesives, containing dimer acid glycidyl esters and polyamides, for bonding of **copper foils** to polythiophenylenes)
- IT **Electric circuits**  
(printed, boards, flexible, adhesion of **copper foils** to polythiophenylenes for)
- IT 25212-74-2  
RL: PRP (Properties)  
(adhesion of, to **copper foils**, for printed circuit boards, adhesives for)
- IT **85699-54-3**  
RL: TEM (Technical or engineered material use); USES (Uses)



(adhesives, for bonding of **copper foils** to polythiophenylenes)  
IT 7440-37-1, uses and miscellaneous  
RL: USES (Uses)  
(plasma, for treatment of polythiophenylenes, for adhesion to **copper foils**)  
IT 85699-54-3  
RL: TEM (Technical or engineered material use); USES (Uses)  
(adhesives, for bonding of **copper foils** to polythiophenylenes)  
RN 85699-54-3 HCA  
CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane, Epikote 872 and Versalon 1165 (9CI) (CA INDEX NAME)

CM 1

CRN 61991-35-3  
CMF Unspecified  
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

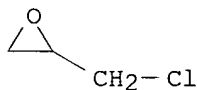
CM 2

CRN 39409-30-8  
CMF Unspecified  
CCI MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

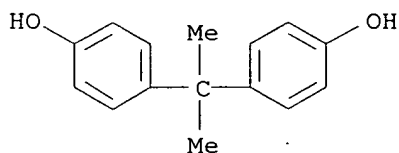
CM 3

CRN 106-89-8  
CMF C3 H5 Cl O



CM 4

CRN 80-05-7  
CMF C15 H16 O2



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